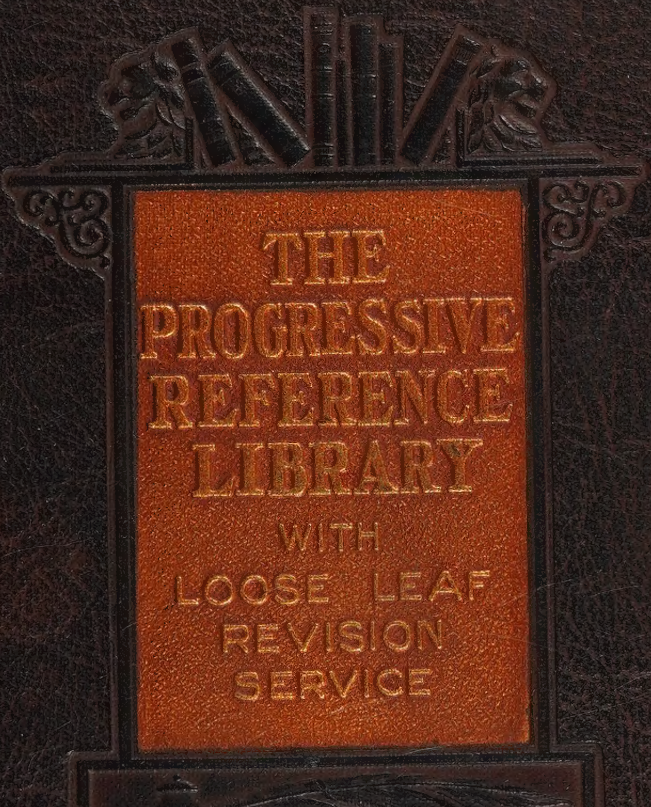

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BERNHART P. HOLST, *Editor in Chief*

Editor of "Practical American Encyclopaedia," "The New Teachers' and Pupils' Cyclopaedia," "International Reference Work," and "Home and School Methods;" Author of "Poems of Friendship;" Former Teacher and Superintendent of Schools in Iowa; Institute Lecturer and Instructor, Traveler, Translator and Interpreter

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first brought to Alexandria from Heliopolis and thence to America.

HELIOS (hē'lĭ-ŭs), or **Helius,** in Greek mythology, the name of the sun god. He was the son of Hyperion and of Thea, the brother of Luna and Aurora, and gave light both to gods and to men. He rose in the east from Oceanus, ascended at noon to the highest point in the heavens, and in the evening returned by way of the west to Oceanus. Two magnificent temples were usually built to his honor, one toward the east and the other toward the west, and in these he was enthroned. Among the finest temples dedicated to him were those of Elis, Argos, Rhodes, and Corinth. The Colossus of Rhodes was a personification of Helios. In later years he became identified with Apollo, probably for the reason that the word Helios denotes the actual sun. He was represented in statuary as seated in a chariot drawn by four horses.

HELIOTROPE (hē'lĭ-ō-trōp), a genus of plants, including both annual and perennial species. They occur mostly in the warmer climates as herbs or undershrubs, but many are now cultivated extensively in all countries as ornamental plants and for the manufacture of perfumes. The leaves are oblong and small, the flowers are white or pale red and of beautiful fragrance, and the fruit is in the form of four drupes covered by a fleshy inclosure. A species known as Indian heliotrope is an Asiatic plant, but now grows wild in the Mississippi valley. It has hairy leaves. The heliotrope thrives best in a light, rich soil and may be propagated by cuttings.

HELIOTROPE.

HELIOTROPE, or **Bloodstone,** a form of quartz allied to chalcedony or jasper. The color is usually deep green with red spots. It is highly prized for seals, signet rings, and various other purposes. Deposits occur in practically all countries, but the finest specimens come from Asia, particularly from Persia, Tartary, and Siberia.

HELIUM (hē'lĭ-ŭm). See **Chemistry.**

HELL, the place of punishment for the wicked after death. The term is used with more or less distinctness in nearly all forms of religion, though the precise nature of the punishment varies widely. The three most common views are that it is a place where a future life is to be spent in eternal misery with no idea of moral retribution, that the offenders punished there for deeds done in this life may escape after a period of torment, and that it enters as an important factor in the moral government of the universe, serving as a place or condition in which the wicked are punished rigorously. The terms used in the Hebrew from which translators have drawn in compiling different works are *sheol,* meaning a grave or pit, and *gehenna,* a term referring to the valley of Hinnom. The Greek *hades,* the unseen, is now used with its original meaning, and those said to enter there are thought to pass into an unseen or invisible state. In the New Testament *gehenna* is translated into the word hell, which is described as a place where the fire is not quenched. It is especially stated that hell was instituted as a place of punishment for the devil and his angels.

HELLEBORE (hĕl'lē-bōr), the common name of several species of plants. The common hellebore of Europe is a perennial herb with short rootstalks. It has leathery leaves and variously colored terminal flowers. The black hellebore has evergreen leaves, white flowers tinged with red, and is commonly called Christmas rose, since it has a roselike flower and blooms early in the season. In this species both the leaves and flower stalks originate from the rootstalks. A species known as green hellebore has been naturalized in the eastern part of Canada and the United States, where it is cultivated and grows wild to a considerable extent. The white hellebore does not properly belong to this class of plants, but is a member of the lily family. Hellebore is a drug used in medicine for its cathartic properties. Formerly it was thought to be useful in cases of insanity and was used by the ancients for treating that malady.

HELLEBORE.

HELLER (hĕl'lĕr), **Stephen,** musical composer, born in Budapest, Hungary, May 15, 1814; died Jan. 14, 1888. He studied music at Vienna, where he began to play successfully in 1827. Two years later he made a concert tour through Europe and in 1830 took up his residence at Augsburg, Germany. He was an intimate friend of Liszt and Chopin. His compositions are characterized by originality and force, in which respect he excels Mendelssohn. The latter years of his life were spent in Paris, where he died.

HELLESPONT. See **Dardanelles.**

HELL GATE, the name of a formerly dangerous pass in the East River, between New York and Long Island. This pass is a portion of the strait which connects Long Island Sound with New York Bay. In 1885 the obstruction was removed by extensive submarine mining and the use of powerful explosives. As these obstructions no longer interfere with the passage of vessels, much value has been added to the East River for navigation purposes.

HELMET, a covering or protection for the head, formerly worn as a piece of armor. The helmet was made of iron or steel throughout the Middle Ages, when it had appendages to be drawn over the neck and face during an engagement. It was intended particularly to furnish protection from behind and from above, since the warrior was expected to defend the face chiefly by an adroit use of the sword or some other weapon. The modern helmet is made of steel, and furnishes protection against bullets and missiles thrown from shrapnel.

HELMHOLTZ (hĕlm'hōlts), **Hermann Ludwig Ferdinand von,** physiologist and physicist, born in Potsdam, Germany, Aug. 31, 1821; died in Berlin, Sept. 8, 1894. He studied medicine at the Military Institute of Berlin, and, after being attached to a public hospital there, returned to his native town as an army physician. He was appointed professor of anatomy in the Academy of Fine Arts at Berlin in 1848, and in 1849 became professor of physiology at Königsberg, where he made much progress in investigating the rapidity of the propagation of nerve excitement. In 1855 he was appointed professor of anatomy at Bonn, and in 1858 became professor of physiology at Heidelberg. He was elected to the professorship of physics at Berlin in 1871 and there, as elsewhere, wrote many works of scientific value. His writings are principally on the sciences, including elaborate works relating to physiology, physics, and anatomy, besides special treatises on optics and acoustics. He prepared several exhaustive texts on mathematics. Helmholtz demonstrated that thought is not instantaneous and that putrefaction takes place independent of living microscopic organisms, and discovered the cause of the vowel sounds of the human speech. King William conferred a patent of nobility upon him in 1883. Among his writings are "Popular Lectures on Scientific Subjects," "On the Conservation of Energy," "Theory of the Impressions of Sound," "Manual of Physiological Optics," "Sensations of Tone," "The Course and Duration of Electric Currents," and "The Combination of Tones."

HÉLOÏSE (å-lō-ēz'). See **Abélard.**

HELOTS (hē'lŏts), the name applied to the slaves in ancient Sparta, which had authority to assign them to citizens and alone had power to dispose of their life and freedom. They were employed largely by citizens in agricultural and mechanical pursuits, but during the time of war they were required to bear arms. They gave evidences of especial bravery during the Peloponnesian War, for which about 2,000 were granted liberty in 431 B. C. Since they were the most numerous element in Sparta, they were kept under close observation by the Ephors, who exercised a wide administrative authority in the government. See **Sparta.**

HELSINGBORG (hĕl-sĭng-bŏr'y'), or **Hälsingborg,** a city of Sweden, located on the Sound, opposite Elsinore, Denmark. It is the converging center of several railroads and has a safe and commodious harbor. The manufactures include sugar, cured meats, canned fish, machinery, and sailing vessels. It has a large export trade in earthenware, iron ore, and fish. The imports consist chiefly of fertilizers and coal. The city is strongly fortified and has been the scene of several battles. Population, 1916, 31,404; in 1926, 48,390.

HELSINGFORS (hĕl-sĭng-fŏrs'), a city and seaport of Europe, capital of Finland, on the northern shore of the Gulf of Finland. As a naval station it is next in importance to Cronstadt. The prominent buildings include the governor's palace, the parliament house, the Lutheran Church of Saint Nicholas, the Russian church, and the commercial exchange. It is the seat of the University of Helsingfors, which has a library of more than 200,000 volumes. The city has many fine parks and charitable institutions. It is a flourishing trade and railroad center, has an excellent harbor, and engages largely in the manufacture of woolen and linen goods, sail cloth, machinery, and tobacco. The trade in fish, lumber, and corn is important. It was founded in the 16th century by Gustavus I. of Sweden. In 1917 it became the capital of the Republic of Finland. Population, 1925, 203,435.

HELVETII (hĕl-vē'tĭ-ī), the ancient people who inhabited the regions now occupied by Switzerland. They were of Gallic or Celtic origin. In 58 B. C. Julius Caesar, then governor of Gaul, came in contact with them. At that time they attempted to emigrate in large numbers from their possessions and occupy southern Gaul, but were defeated by Caesar at Bibracte, in Burgundy, and made subject to Roman authority. In the "Commentaries" written by Caesar an account is given of these people. Later they refused to recognize Roman supremacy, which caused Vitellius to send General Caecina to subdue them. After that the Helvetii disappear from history and their territory was occupied by the Alemanni.

HELY-HUTCHINSON, Sir Walter Francis, statesman, born in Dublin, Ireland, Aug. 22, 1849; died in 1913. He studied at Cambridge and soon entered upon a long and distinguished colonial service. In 1874 he accompanied Sir Hercules Robinson on a special mission to the Fiji Islands, where he was a private secretary for some time, and in 1883 became secretary to the Governor of Malta, where he was Lieutenant Governor for five years. He was made Governor of the Windward Islands in 1889, serving until 1893, when he became Governor of Natal. In 1901 he was appointed Governor of the colony of the Cape of Good Hope with his seat of residence at Cape Town. He accomplished much in giving a responsible government to Natal and Zululand, and in furthering the commercial and educational interests of Cape Colony.

HEMANS (hĕm′a̮nz), **Felicia Dorothea,** poetess, born in Liverpool, England, Sept. 25, 1793; died near Dublin, Ireland, April 26, 1835. She showed extraordinary taste for poetry, wrote several ballads at the age of six years, and published her first volume of poems in 1808. In 1812 a second edition of poems appeared, entitled "Domestic Affections." In the same year she married Captain Hemans, who removed to Italy in 1818 on account of his health and family difficulties, and the two never met after that. Subsequently Mrs. Hemans resided with her five children in North Wales and Dublin. Her poetry is descriptive and thoughtful, and much of it is perfect in pathos and meritorious in sentiment. Among her best known productions are "Hymns from Childhood," "Scenes and Hymns from Life," "The Graves of a Household," "The Treasures of the Deep," "The Vespers of Palermo," and "The Siege of Valencia."

HEMATITE (hĕm′ȧ-tīt), or **Specular Iron,** a common ore of iron, divided on account of the color into red and brown hematite. Both kinds occur in stratified and igneous rocks. The crystals are in the hexagonal system, and some of the varieties have a characteristic metallic luster. The red hematite is an important mineral, containing about seventy per cent. of iron, and is widely distributed. The most extensive deposits of North America are in the Lake Superior region, where the ranges of Gogebic, Vermilion, Menominee, Mesabi, and Marquette are located. Iron Mountain and Pilot Knob, Missouri, are the most noted regions producing this mineral in the Mississippi valley.

HEMENWAY, James Alexander, public man, born in Boonville, Indiana, March 8, 1860. He attended the public schools, was admitted to the bar in 1885, and for some time served as prosecuting attorney in the second judicial district of Indiana. He was elected to Congress in 1894, where he served in the House of Representatives for ten years. In 1905 he was elected to succeed Charles W. Fairbanks in the United States Senate.

HEMIPTERA (hė-mĭp′tė-rȧ), the name of an order of insects, so called because many of the species have wings formed partly of horny and partly of membraneous matter. All have the mouth formed like a beak or proboscis for piercing the plants or animals on which they feed. Metamorphosis is incomplete, though the young do not have a close resemblance to the adults. Some of the species are wingless. Among the insects belonging to this order are the cicada, louse, bedbug, water scorpion, chinch bug, and squash bug. See **Insects.**

HEMISPHERE (hĕm′ĭ-sfēr), one of two equal parts into which a globe or sphere is divided by a plane passing through its center. Geographers use the term in describing the surface of the earth, which they divide into the land and the water hemispheres. Another division is to classify the surface as the Eastern Hemisphere and the Western Hemisphere, the former comprising Africa, Asia, Australia, and Europe, and the latter containing North America and South America. See **Earth.**

HEMLOCK (hĕm′lŏk), a genus of poisonous plants of the parsley family. They have a tall, hollow stem and white flowers in compound umbels surrounded by an involucre of three or more leaflets. The best known species is the poisonous hemlock, or spotted hemlock, found extensively in waste places in Europe, but it is now naturalized in America. This plant grows from two to six feet tall, has a spotted stem, and closely resembles parsnip in its root growth. The poison contained in the different species is an alkali, which causes weakness and later death by paralysis. Extracts of the leaves and fruit have valuable medicinal properties and are used as powerful sedatives. The Grecians administered capital punishment by giving a decoction of hemlock to criminals, and this is the form of death which Socrates died. In medical practice it is now used as a substitute for opium. It is valuable in treating chronic rheumatism, whooping cough, and can-

POISONOUS HEMLOCK.

cerous and other sores. The *hemlock spruce,* a species of spruce, is a widely distributed and valuable evergreen tree of North America. It yields large quantities of lumber.

HEMLOCK SPRUCE. See **Spruce.**

HEMP, a class of plants with unisexual flowers, native to Asia, but now naturalized in all portions of the world. Hemp is cultivated extensively in the Philippines, the United States, Italy, Russia, and many other countries. It is an annual plant and varies in height from two to twenty feet, according to climatic conditions. The quantity of seed sown per acre is from one to two bushels. It is drilled in rows for the reason that the male plants mature earlier than the female, the latter growing larger and requiring a month longer to ripen the seed. A pithy matter fills the stem, the latter being constituted of woody fibers and covered with a fibrous bark. In India it is cultivated for the narcotic drug commonly called *hashish* (q. v.) and in other countries largely for the fibers, which are useful in the manufacture of sail cloth, ropes, cordage, and other coarse fabrics. The finer species are used extensively in manufacturing shirting, sheeting, and other fabrics suitable for wearing apparel and household purposes. These products are coarser than those made from flax fibers, but they may be bleached with equal success and are much more durable. The seeds produced by the female plant yield an oil highly valuable for mixing paints and varnish, and in the manufacture of soap and illuminating products. Cage birds are fed chiefly with hemp seed. Kentucky is the principal hemp-producing State. Manila and sisal hemp are not classed with the true hemps.

HENDERSON (hĕn′dẽr-sŭn), a city in Kentucky, county seat of Henderson County, on the Ohio River, 148 miles west of Frankfort. It is on the Illinois Central, the Louisville and Nashville, and other railroads. The river is crossed here by a large bridge. The chief buildings include the courthouse, the high school, the public sanatorium, and several churches. Atkinson Park includes a tract of 100 acres. Electric lights and street railways, pavements, and waterworks are among the improvements. The chief manufactures are cotton and woolen goods, furniture, ironware, machinery, and packed meats. Henderson was one of the first settlements on the Ohio River. It was incorporated in 1797. Population, 1920, 12,169.

HENDERSON, David Bremner, soldier and statesman, born in Old Deer, Scotland, March 14, 1840; died Feb. 25, 1906. He came to Illinois in 1846, settled in Iowa three years later, and there attended the public schools and the Upper Iowa University. In 1861 he entered the Union service as a private, and was discharged in 1863 on account of a severe wound received in action. He reëntered the army as colonel in 1864 and rendered valuable service. In 1865 he was admitted to the bar, became assistant United States district attorney in 1871, and was elected to Congress as a Republican in 1883. Subsequently he was reëlected a number of times. When Thomas B. Reed retired from Congress in 1899, Henderson was selected to succeed him as speaker of the House of Representatives. He was an influential and efficient member of various important committees, and takes high rank among the speakers and legislators of the United States. In 1901 he made an extended visit to Europe.

HENDRICKS (hĕn′drĭks), **Thomas Andrew,** statesman, born near Zanesville, Ohio, Sept. 7, 1819; died in Indianapolis, Ind., Nov. 25, 1885. In 1841 he graduated from South Hanover College, studied law, and was admitted to the bar in 1843. In 1850 he took part in the State convention to revise the Indiana constitution. He was a member of Congress from 1851 to 1855, where he served on several important committees, and was appointed Commissioner of the United States Land Office by President Pierce. In 1863 he was elected to the United States Senate, and there developed much influence as a Democratic leader. The same party elected him Governor of Indiana in 1872, defeating Thomas M. Brown, and afterward he practiced law at Indianapolis until 1884, when he was elected Vice President with Grover Cleveland. His death occurred before the expiration of the first year of his term.

HENGIST AND HORSA (hĕng′gĭst), two leaders of the Germanic invasion of England, which occurred in 449. The following year they defeated the native tribes near Stamford. Hengist was a prince of the Jutes and Horsa, his brother, held an important command in the army. The latter was defeated and slain at Eaglesford, now Aylesford, in 455. However, Hengist conquered much of the country and reigned thirty years. His successes led to a large immigration of the Teutons.

HEN HAWK. See **Goshawk; Hawk.**

HENLEY (hĕn′lĭ), **William Ernest,** poet and essayist, born in Gloucester, England, Aug. 23, 1849; died in 1903. He was educated in his native town, began writing for the London magazines, and in 1877 became editor of *London.* In 1889 he was engaged as editor of the *Scots Observer* and contributed to the *Saturday Review* and other magazines. He was appointed editor of the *New Review* in 1894. Saint Andrew's University granted him a degree in 1893. His writings include "Views and Reviews," "Song of the Sword," "English Lyrics," "London Types," and "Hawthorn and Lavender, and Other Poems."

HENLEY REGATTA (rê-găt′tȧ), a famous rowing contest held annually at Henley-on-Thames, England. The regatta was organized in 1839, as a result of rowing contests held previously between the students of Oxford and Cambridge. Only two boats at a time are permitted in the races, since the river is narrow at this place, and both English and foreign amateurs are eligible. The course is about one and a third miles in length. The contests are held in the month of July and continue for three days. They are attended by vast assemblages of people from the United Kingdom and foreign countries.

HENNE-AM-RHYN (hĕn′ne-âm-rĕn), **Otto,** born in Saint Gall, Switzerland, in 1828. His father, Anton Henne, was a poet and historian. After studying at Bern, he was teacher in the schools of Switzerland a number of years, and in 1872 became editor of a journal devoted to freemasonry at Leipzig, Germany. He lectured at the University of Zurich in 1882-85, and in the latter year was made state archivist at Saint Gall. His writings are exclusively in the German, but many have been translated and all of them bear evidence of careful research and study. They include "History of the People and Culture of Switzerland," "German Folklore," "Culture of the Past, Present and Future," "Christianity and Progress," "Hand-Book of the History of Culture," "General History of Civilization from the Most Ancient Times until the Present," and "History of Civilization Among the Jewish People."

HENNEPIN (hĕn′nē-pĭn), **Louis,** eminent explorer, born in Ath, Belgium, about 1640; died in Utrecht, Holland, in 1706. He became a member of the Franciscan order, preached at Halles, Belgium, and at the Battle of Seneffe, between the Prince of Conde and William of Orange, in 1674, was regimental chaplain. About that time he secured orders to preach at Quebec, Canada, and, after coming to America, founded a convent at Fort Frontenac. In 1679 he accompanied the La Salle expedition to Niagara and sailed with it on lakes Erie, Huron, and Michigan, proceeding as far as to the mouth of the Saint Joseph River. In 1680 he sailed with two men in a canoe down the Illinois River to its mouth and thence up the Mississippi River, but the three fell into the hands of Indians and were carried by them to the country occupied by the Sioux. While on this trip he discovered the Falls of Saint Anthony, and, after spending eight months among the savages, was rescued by a party and taken to Green Bay by way of the Wisconsin River. In April, 1682, he reached Quebec and soon after sailed to France, where he published a description of Louisiana. Later he secured an appointment to the convent of Renty in Artois, but subsequently returned to Holland, and resided for a time in England. His historical works are of much value, but contain various assumptions and exaggerations. His later publications embrace "The New Discovery of a Vast Country in America," and "A New Voyage in a Country Greater than Europe." The latter went through numerous editions and was extensively read in many languages.

HENRY (hĕn′rĭ), the name of seven sovereigns of the former Germany, the first of whom is known as King of Germany and the others as Holy Roman emperors.—Henry I., King of Germany, born in Saxony in 876; died in Memleben, in 936. He succeeded his father, Otto, of Saxony, in 912, greatly enlarged the influence of Germany, and was making preparation to claim the imperial crown of Rome when his death occurred.—Henry II., Holy Roman Emperor, born in 972; died in 1024. He became Duke of Bavaria in 995, and, after the death of Otto III., succeeded to the German crown in 1002. In 1014 he was crowned emperor by Benedict VIII., with the title of Holy Roman Emperor.—Henry III., Holy Roman Emperor, son of Conrad II., born in 1017; died at Botfeld in 1056. In 1039 he ascended the throne of Germany, exercised marked power in the church and state, and asserted the supremacy of the German states in European affairs.—Henry IV., Holy Roman Emperor, son of Henry III., born in Goslard, Nov. 11, 1050; died in Liege, Aug. 7, 1106. He succeeded his father in 1056 under the regency of his mother. His reign is noted for the prolonged struggles resulting from religious differences. In 1070 he assumed supreme control, but was generally opposed by the people. He had at his disposal a well-equipped army, with which he continued to operate until his supremacy was established. Pope Pascâl II. induced his son, Conrad, to revolt. Conrad succeeded in defeating the army of his father and confined him as a prisoner, but Henry escaped and died soon after.—Henry V., Holy Roman Emperor, son of Henry IV., born in 1081; died at Nimeguen in 1125. He was appointed as the successor of Henry IV., because his elder brother, Conrad, had revolted, and in 1165 succeeded to the throne. His reign was marked by religious differences with the popes of Rome, which were somewhat allayed by the concordat of Worms in 1122, but broke out anew some years later.—Henry VI., Holy Roman Emperor, son of Frederick I., born in 1165; died at Messina in 1197. He succeeded to the German crown in 1169 and was recognized as a military leader in the third Crusade, which occurred in 1190. The most interesting event of his reign was a campaign against Italy and Naples, during which he greatly extended the boundaries of his empire.—Henry VII., Holy Roman Emperor, born in 1262; died at Buonconvento, Aug. 24, 1313. He was the son of Henry II., Count of Luxemburg, was elected to the throne of Germany in 1308 and was crowned emperor in 1312. After adjusting internal complications, he started on an expedition to subdue Naples, but died before accomplishing his designs.

HENRY, surnamed The Lion, Duke of Saxony, born in 1129; died at Brunswick in 1195. He was the son of Henry the Proud, a nobleman. In 1146 he became the recognized head of the Guelphs and was made Duke of Saxony and Bavaria, though the latter did not become a part of his dominion until in 1154. His possessions occupied the region extending from the Adriatic to the Baltic and North seas, which gave him prestige as the most powerful prince of Germany. In 1166 a league was formed against him by various princes who feared his authority, but these he was able to withstand. Besides founding Munich and various other cities, he encouraged industry and promoted commerce. He granted trade advantages to Lübeck and Hamburg and was a patron of learning.

HENRY I., King of England, youngest son of William the Conqueror, born at Selby, in Yorkshire, in 1068; died near Rouen, France, Dec. 1, 1135. He was proclaimed king in 1100, while his elder brother was absent on a Crusade, and conciliated the Scotch by marrying Matilda, daughter of Malcolm III., King of Scotland. In his reign occurred a war with France, which terminated to his advantage by a treaty of peace in 1113. The Normans and English became united into one people within this period. He was succeeded by his nephew, Stephen, the Count of Blois.

HENRY II., King of England, son of Matilda by her second husband, born in Le Mans, France, March 5, 1133; died at Westminster, July 6, 1189. His father was Geoffrey Plantagenet and Henry was the first king of that line. He was crowned on Dec. 19, 1154, and reigned prosperously until a long struggle arose with Thomas à Becket regarding church subserviency, in which Henry was only partially successful in making the state superior in power to the church. After the death of Becket, he reigned successfully and is regarded among the most able English kings. His two sons, Henry and Richard, in 1173, being encouraged by their mother, raised a rebellion against him. After being defeated in a battle, he submitted to his adversaries, and died shortly after. He was succeeded by his son, Richard I.

HENRY III., King of England, grandson of Henry II., eldest son of King John, born Oct. 1, 1207; died at Westminster, Nov. 16, 1272. He succeeded his father on the throne at the age of ten years, and, like him, possessed a character notorious for weakness and unfitness for his high station. His long reign of 56 years was disturbed more or less by frequent insurrections and local differences. The modern Parliament of two houses had its beginning in his reign. He was succeeded by his son, Edward I.

HENRY IV., King of England, first of the house of Lancaster, born in Bolingbroke, April 4, 1367; died at Westminster Abbey, March 20, 1413. He was the eldest son of John of Gaunt. From the place of his birth he was surnamed Bolingbroke, became Earl of Derby in 1386, and married Mary de Bohun. In 1390 he took part in a war in Tunis and the Barbary States, fought with the Crusaders, and in 1398 was banished for supporting Richard II. against Gloucester. The following year he usurped the crown by securing from Richard II. an abandonment of his claims. His reign of fourteen years was marked by numerous insurrections, oppressive taxation, and severe laws against heretics. The Lollards were first persecuted in this period. His death occurred after a severe affliction of leprosy and epilepsy. His son, Henry V., succeeded him as King of England.

HENRY V., King of England, eldest son of Henry IV., born in the castle of Monmouth, Aug. 9, 1387; died in Vincennes, France, Aug. 31, 1422. He succeeded his father in 1413, after distinguishing himself in the war against the Welsh. His successes caused him to become successively king's lieutenant in Wales, constable of Dover in 1409, and captain of Calais in 1410. Prolonged struggles between the dukes of Orleans and Burgundy for the throne of France led Henry to devote the greater part of his energies to the purpose of securing possession of the French crown. He landed a large army near Harfleur on Aug. 11, 1415, which cost him 15,000 men, and caused him to begin his return to England by way of Calais. At Agincourt a large French army intercepted his progress. This he completely routed on Aug. 25. He made a second invasion of France in 1417, winning decisive victories, and in 1421 crossed the English Channel a third time for the purpose of supporting his brother, the Duke of Clarence. Before the end of that year all of Normandy was in possession of the English, his army occupying Paris. About the same time a son was born to him, who succeeded him as Henry VI. History accords Henry V. a place among the brave warriors of England. His life, though largely influenced by the excitement of war, exhibits examples of patriotism and religious devotion.

HENRY VI., King of England, born in Windsor, Dec. 6, 1421; died in the Tower, May 22, 1471. His father died when young Henry was but nine months old, his uncle, the Duke of Bedford, becoming governor of France, and his uncle Humphrey, Duke of Gloucester, protector of England. In 1429 he was crowned at Westminster and the following year at Paris. Immediately a war with France began, in which the heroism of Joan of Arc inspired the French hosts to victory, which resulted in the loss of all the English possessions in France, except Calais. King Henry married Margaret of Anjou, daughter of Rene of Provence, in 1445. The Wars of the Roses, an extended contest between the Lancasters and Yorkists, began in 1455. His reign is marked by incompetence and lack of judgment. Among the few good things he did are the establishment of Eton College and of King's College. The latter is a branch institution of Cambridge.

HENRY VII., King of England, first sovereign of the Tudor line, born at Pembroke Castle, in South Wales, Jan. 21, 1457; died April 22, 1509. He was a son of Catharine of France, the wife of Henry V., and Owen of Tudor, and succeeded Richard III. in 1485, after landing a force at Millford Haven and slaying the king in the Battle of Bosworth. He married Elizabeth of York, thus uniting the houses of Lancaster and York. The reign of Henry was disturbed by repeated insurrections, but within the period the agricultural interests were encouraged and the internal resources of the country began to attract wider attention. Laws were enacted to curtail the influence of the feudal nobility. These measures made it possible for the middle classes to enjoy greater prosperity. Later a general suppression of the influence of the aristocratic party tended to enlarge his own power in the nation. In the general prosperity of the country no one profited more than he, since at his death the estate of the family was valued at $10,000,000. However, few of the English kings did more for industrial and commercial improvements, and none was more earnestly devoted to the establishment of justice.

HENRY VIII., King of England, second son of Henry VII., born at Greenwich, June 28, 1491; died Jan. 28, 1547. The rival claims of the York and Lancaster lines were united through his mother, Elizabeth of York, and, when his brother Arthur died, in 1502, he became heir apparent. At the age of twelve he was betrothed to Catharine of Aragon, the widow of his brother, and in 1509 succeeded his father. Personally he possessed many strong points, since he had been educated with considerable care, was a pronounced Englishman, and had a reputation for much personal beauty. During the first twenty years of his reign his prime minister, Wolsey, pursued a policy of making England important as a mediator between France and Spain, and within this time occurred the meeting between Henry and Francis at the Field of the Cloth of Gold (1520) and the battles of Pavia and Rome.

In 1520 Henry decided to divorce Catharine. This step was taken for various reasons, the alleged causes being that she was older than he and had been his elder brother's wife. Besides she had borne him no male heir. However, it is probable that he wanted a divorce because of having formed an attachment to Anne Boleyn. In his design to become separated from Catharine he was refused sanction from the Pope, which caused the separation of England from the Roman Church to take form. Next he referred his case to the universities. Through these he obtained an affirmative decision and the marriage with Catharine was annulled in 1533. About the same time the marriage with Anne Boleyn was declared lawful, but the Pope still refused to recognize the marriage and Parliament came to his rescue with two acts, one in 1534, setting aside the papal authority in England, and another in 1535, by which Henry became head of the church in England. By suppressing the monasteries he inflicted a severe blow to Catholicism and England became Protestant.

Next Henry became enamored of Jane Seymour and Anne Boleyn was executed in the Tower in 1536, the marriage with Jane Seymour having been solemnized the day before. The birth of Prince Edward in 1537 gave Henry an heir apparent, but his mother died soon after. In 1540 Henry contracted his fourth marriage, with Anne of Cleves, in accordance with negotiations conducted by Thomas Cromwell for the purpose of gaining the Protestant influence of Germany. The unfortunate relations between Anne of Cleves and Henry resulted in a divorce and caused the execution of Thomas Cromwell. Catharine Howard now became Henry's fifth wife, but she was executed on a charge of infidelity in 1542. His sixth wife was Catharine Parr, whom he married in 1543, and she had the good fortune to survive the king. An alliance between France and Scotland plunged England into a war. Henry renewed his alliance with Charles V. of Germany, but the latter withdrew soon after and the war continued until 1546, when a treaty was negotiated. Among the persons to suffer death through the designs of Henry are such men as More, Wolsey, Cromwell, Fisher, and Surrey. He reigned 38 years, but died unmourned by the people. His son by Jane Seymour, Edward VI., succeeded him as king.

HENRY I., King of France, son of King Robert, born about 1011; died Aug. 14, 1060. He succeeded to the throne in 1031. His reign was disturbed by several wars with Robert II. of Normandy. His son, Philip I., succeeded him.

HENRY II., King of France, second son of Francis I., born in Saint Germain, March 31, 1519; died July 10, 1559. He married Catherine de' Medici in 1543, succeeded his father, Francis I., in 1547, and immediately proceeded to strengthen the army for successful operation against the English. After securing the assistance of the Guises, he captured Calais in 1558, after that city had been in possession of the English 210 years. The following year he was fatally wounded by accident in a tournament and died soon after. He was succeeded by his eldest son, who became Francis II.

HENRY III., King of France, third son of Henry II., born Sept. 19, 1551; died Aug. 2, 1589. Under the influence of his mother, Catherine de' Medici, he became a zealous advocate of the Catholic faith, and was active in promoting the causes that led to the Massacre of Saint Bartholomew. His mother succeeded in bringing about his election to the throne of Poland in 1573, but he fled from Cracow when his brother's death occurred, and succeeded him as King of France in 1575. His reign was disturbed by religious fanaticism, numerous riots, and continuous contentions between the Catholics and Huguenots. Jacques Clement, a Dominican friar, made an assault upon him, stabbing him with a knife, from the effects of which he died the following day. He was succeeded by Henry of Navarre.

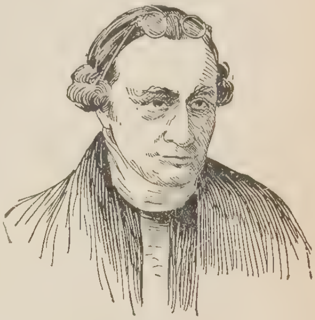
HENRY IV., King of France and Navarre, called The Good and The Great, born in Bearn, France, Dec. 14, 1553; died May 14, 1610. His mother was a Calvinist and exercised much care in selecting his instructors, and, to remove him from Catholic influences, took him to La Rochelle, where he joined the Huguenot army, taking part in the battles of Jarnac and Moncontour. The Protestant party selected him their chief, but because of his youth Coligny remained principal in command. He married Margaret of Valois, sister of Charles IX., in 1572, and his life was spared in the Massacre of Saint Bartholomew only on condition that he would embrace the Catholic faith. This he did apparently with the intention of saving his life, since he sought every possible means to escape from the court of France, where he was held a prisoner, and succeeded in 1576, when he promptly joined the army of the Huguenots.

When Henry III. died, in 1589, his right to the throne was disputed because of his religious views. Opposition did not cease until he made a formal recantation of Protestantism in 1593, and in 1594 he was received at Paris as king. Civil war continued nearly four years after. In 1598 a treaty of peace was concluded between Spain and France, and in April of that year Henry signed the edict of Nantes, by which religious liberty was granted to the Protestants. His reign from this on was characterized by general prosperity.

HENRY, O., the pen name of William Sydney Porter, a popular American writer of short stories, born in Greensboro, N. C., in 1862; died in 1910. The first of O. Henry's books was *Heart O' the West,* published in 1907, and soon after followed *Roads of Destiny* and *Cabbage and Kings.* However, his more popular books are based upon life in New York, in the shops, in offices, in activities of the thoroughfares, and these have been read for their keen observances and friendly sympathy. These books, including some of humor as the titles suggest, are *The Voices of the City, The Four Million, Rolling Stones, Gentle Grafter, Strictly Business, Let Me Feel Your Pulse,* and *Sixes and Sevens.*

HENRY, Caleb Sprague, clergyman and author, born in Rutland, Vt., Aug. 2, 1804; died March 9, 1884. After graduating from Dartmouth College in 1825, he studied at New Haven and Andover, and was ordained minister of the Congregational Church in 1829. As a general writer he holds a high rank. His works include "Compendium of Christian Antiquities," "Social Welfare and Human Progress," "Ancient and Modern History," "Epitome of the History of Philosophy," "Moral and Philosophical Essays," and "Satan as a Moral Philosopher."

HENRY, Joseph, physicist, born in Albany, N. Y., Dec. 17, 1799; died in Washington, D. C., May 13, 1878. A fund for the purpose of defraying the expenses of his education was secured by him while working in a jewelry store. After attending the Albany Academy, he began to experiment in electricity, and in 1830 invented an electro-magnetic telegraphic instrument. Indeed, many authorities, including Leonard D. Gale, give him the credit of inventing the first instrument of this kind rather than Professor Morse. In 1832 he was elected to the chair of natural philosophy at Princeton, and in 1846 became secretary and director of the Smithsonian Institution at Washington. He was president of the Society of Natural Science in 1868 and of the Washington Philosophical Society in 1871.


PATRICK HENRY.

HENRY, Patrick, orator and patriot, born in Hanover County, Virginia, May 29, 1736; died June 6, 1799. His father, John Patrick, came from Scotland. After attending the common schools, he undertook the study of a classical course, but discontinued it to engage in business as a storekeeper and farmer. In these enterprises he failed, studied law, and in 1760 became a lawyer. He established his reputation as a lawyer by his defense in the Parson's Cause (q. v.), in which a clergyman sought to recover his salary which was to be paid in tobacco. In 1763 he attracted attention as an opponent of excessive taxes and two years later was elected to the House of Burgesses, which held its meetings at Richmond, Va., where he delivered addresses against the stamp act and other issues. He was chosen a member of the first Continental Congress in 1774, in which body he became famous as a champion of constitutional liberty. In the provincial convention at Richmond, in 1775, he introduced a resolution to put the colony in a state of defense. In support of this resolution he delivered several orations worthy of the cause he advocated, in one of which he expressed the sentiment, "Give me liberty or give me death." In 1776 the State of Virginia voted for independence, largely on account of his untiring efforts. The following year he was elected Governor of the State, was reëlected four times, and in 1787 led the party opposed to the Federal Constitution, this course resulting from his devotion to democracy and the rights which he thought should be reserved to the states. In 1794-95 he was a United States Senator, served as a member of the Legislature a number of years, and declined the position of Secretary of State offered him by President Washington in 1795. Though excelled in constructive statesmanship by several prominent men of Virginia, he ranked above them as an orator, especially in his ability to stir and sway the passions of an assemblage.

HENRY THE NAVIGATOR, fourth son of King John I. of Portugal, born in Oporto, March 4, 1394; died Nov. 12, 1460. In 1415 he took part in the conquest of Ceuta. After the death of his father he resided at Sagres, near Cape Saint Vincent. During the war with the Moors of Africa he cruised on portions of the ocean never before navigated. For the purpose of disseminating knowledge in geography, he established schools of navigation and an observatory at Sagres. In 1418 he sent an expedition of his pupils on a voyage of research, which resulted in the discovery of the Madeira Islands, and a few years later of the Azores. In 1433 his navigators doubled Cape Bojador. Another expedition discovered Cape Blanco in 1441 and Cape Verde in 1445. Later he directed expeditions that partially explored Senegal and Gambia, established commercial relations with West African natives, and prepared the way for Portugal to develop a large commerce and secure important colonial possessions.

HENSCHEL (hĕn′shel), **Georg,** singer and composer, born in Breslau, Germany, Feb. 13, 1850. He studied music at the Conservatory of Leipzig and at Berlin, where his voice developed great richness as a baritone. In 1881 he came to America as conductor of the Boston Symphony Orchestra, and after holding that position four years he returned to Europe and was professor of singing at the Royal College of Singing, London, in 1885-86. In London he was in demand as a teacher of singing, having among his pupils Princess Louise, a daughter of Queen Victoria. He married Lilian Bailey, an American soprano singer, in 1881, who joined him in touring the principal cities of America. He is the author of many compositions, among them "Nubia," "Stabat Mater," and "A Sea Change."

HENTY (hĕn′tĭ), **George Alfred,** author, born in Huntington, England, Dec. 8, 1832; died Nov. 16, 1902. He studied at the Westminster School and Caius College, Cambridge, and served in the Crimean War as purveyor. In 1855-75 he was special correspondent of the London *Standard,* and as such reported the principal engagements of the Austro-Italian, the Franco-German, and the Turko-Servian wars. In 1868 he accompanied the Abyssinian expedition and later the Ashanti expedition, attended the opening of the Suez Canal, and made a tour of the mining districts of America. His writings include a diversity of books, most of which combine romance and history, and many of them have been read very extensively by young people. "A Woman of the Community," "All but Lost," and "Dorothy's Double" are novels. Among his other works are "Out with Garibaldi," "Malcolm, the Waterboy," "In the Irish Brigade," "Treasure of the Incas," "With Kitchener in the Sudan," "With the British Legion," and "With Roberts to Pretoria."

HEPATICA (hḗ-păt′ĭ-kȧ), a plant common to the temperate parts of Europe and North America, where it blooms in the early part of spring. It belongs to the genus *Anemone.* The stalk is hairy, the leaves are three-lobed, and the flowers are somewhat similar to the buttercup. Owing to the bloom coming early, the hepatica is used in the study of nature in elementary schools. Some of the species are cultivated for their beautiful flowers, which are pink, white, or blue.

HEPATICA.

HEPBURN, William Peters, public man, born at Wellsville, Ohio, Nov. 4, 1833; died Feb. 7, 1916. He came to Iowa in 1841, where he attended the public schools, and in 1854 was admitted to the bar. In 1861 he joined the Union army as a volunteer, and was promoted successively to the ranks of captain, major, and lieutenant colonel in the Second Iowa Cavalry. He was elected to Congress as a Republican in 1880, serving six years, and was again elected in 1892 and was several times reëlected, but was defeated for reëlection in 1908. As chairman of the Committee on Interstate and Foreign Commerce, he promoted interests in the regulation of railroad rates, and is author of the provision of the law which prohibits the issuance of passes.

HEPTARCHY (hĕp′tärk-ȳ), a frequent appellation of the seven principal kingdoms established in England by the Saxons. These established governments did not all exist simultaneously, nor were they entirely independent of each other. They included Essex, Sussex, Mercia, Wessex, Kent, North Umbria, and East Anglia. In 827 they were united by King Egbert of Wessex, who assumed the title of King of England.

HERALD (hĕr′ąld), an officer employed in ancient and mediaeval times to carry messages of courtesy or defiance between sovereigns or persons of knightly rank, to challenge to battle, and to proclaim war or peace. In more recent times the official duties of a herald included the granting of arms, marshaling processions and public ceremonies, treating and drawing up genealogies, recording the creation and succession of peers and others, and to determine and regulate all matters in connection with the use of armorial bearings. It is probable that the office originated as early as the origin of coats of arms. In England heralds are appointed by the earl marshal. Most European countries still continue the office of a herald, but the duties are modified from those pursued in former times.

HERALDRY (hĕr'ald-rў), the science that treats of blazoning or describing armorial bearings or coats of arms, and of determining genealogies, precedent, and other matters in connection with titular rank. Historians trace the origin of heraldry to remote antiquity and find it practiced by the early Egyptians and the twelve tribes of Israel. It is exemplified by the Roman eagles. It is probable that signs and emblems were first used for clans and families to distinguish each other, each bearing different coats of arms. During the Crusades it was necessary to use heraldric arms extensively for the purpose of distinguishing the commanders of the different military organizations from each other, which led to an extensive adoption of heraldric practice in Western Europe. The coats of arms borne consisted of an escutcheon or shield, on which were displayed the emblems to distinguish the different commanders or bands of warriors. Besides indicating the rank of the bearer, many designated the name and residence, and others the country or province in which the ruler held sway. The Herald's College was incorporated in England in 1484, and in it was vested the power to inquire concerning rights and titles in heraldry, to regulate the use of heraldric devices, and to inquire into claims and violations growing out of the system. The rules now recognized by the college are modified largely from those first enforced, but in many respects they are similar to those of other European courts.

HERAT (hĕr-ät'), a city of the northwestern part of Afghanistan, on the Hari-Rud River, about 370 miles west of Cabul. It is surrounded by a rich agricultural and fruit-growing country, has an important market, and is famous as a strategic military and political stronghold. Its trade is controlled chiefly by the Hindus and consists largely of rice, wool, dyes, indigo, asafetida, and leather. The imports from Europe include principally ironware, machinery, textile fabrics, and sugar. Though not extensive, the local manufactories are noted for their production of cloaks, harness, carpets, shoes, sword blades, and sheepskin caps. It was the capital of Afghanistan for many years, but at present is the capital of the western division. Timour captured the city in 1381. It passed into the hands of the Persians in 1510, but has been a part of Afghanistan since 1863. Population, 45,500.

HERB, any plant whose stem does not become woody, but dies down to the ground after the growing season. Many herbaceous plants, such as annuals, die entirely and are propagated from the seed, while others die only to the ground and may be grown either from the seed or the root. To the former belong the pea, bean, tomato, melon, and sunflower, while the latter include the caraway, parsley, sage, and horseradish. Herbs are useful in medicines and for food. Many species of aromatic plants are employed in the preparation of viands, such as dill with cucumber pickles and sage in dressings with delicate meats.

HERBART (hĕr'bärt), **Johann Friedrich,** philosopher and author, born in Oldenburg, Germany, May 4, 1776; died in Göttingen, Aug. 14, 1841. At an early age he gave evidence of natural ability as a student, studied under Fichte at Jena, and in 1805 became lecturer in philosophy at Göttingen. In 1809 he was appointed to the chair of philosophy at Königsberg, but returned to Göttingen in 1833, remaining there until his death. While at Göttingen he established and conducted a seminary of pedagogy in which he promulgated his views on teaching and psychology. His system became known as *realism,* as opposed to contemporary *idealism.* The views of Herbart include those of concentration, apperception, and the epoch theory, under which each individual life is supposed to live again and manifest all the different stages of development in human history. All studies are classified into formal and content studies, and their efficiency to influence right development is carefully investigated. Herbart regards history the most potent study in developing child character, next to it he classes nature studies, and lastly he places the formal studies, such as reading, writing, and arithmetic. With the decline of Hegelianism in Germany the system of Herbart became very influential. It has been greatly elaborated and is still intensely popular. The many lectures and writings of Herbart have received more attention in America than any others within recent years. They have greatly influenced and given a tendency to educational thought. His greatest work is "Pedagogics." Among his other writings are "Introduction to Philosophy," "Text-book of Psychology," "Universal Metaphysics," "Encyclopaedia of Philosophy," "Application of Psychology to the Science of Education," and "Universal Metaphysics."

HERBERT (hĕr'bĕrt), **George,** religious poet, born in Montgomery Castle, Wales, April 3, 1593; died in February, 1633. He was educated at Westminster and Cambridge, became a minister, and secured an appointment as pastor in 1626. In 1630 he was made rector of Bemerton, where he resided until his death. Among his many beautiful productions are "The Temple" and "Character of the Country Parson."

HERBERT, Hilary Abner, statesman, born in Laurensville, S. C., March 12, 1834. He studied at the universities of Alabama and Virginia, was admitted to the practice of law, and served in the Confederate army until 1864. In 1878 he was elected to Congress as a Democrat and served continuously until 1893, when he was appointed Secretary of the Navy by President Cleveland. Subsequently he resumed the practice of law. He published "Why the Solid South." He died March 6, 1919.

HERBERT, Michael Henry, diplomat, born in England, June 25, 1857; died in 1903. He was made secretary of the Paris legation in 1883, and five years later was transferred to Washington, where he was appointed chargé d'affaires. In 1892 he became secretary of the British legation at Washington and later held similar positions at The Hague, Constantinople, Rome, and Paris. He was made ambassador from Great Britain to Washington as successor to Lord Pauncefote in 1902, in which office he served efficiently until 1903, when he was succeeded by Henry Mortimer Durand. He married a sister of Mrs. Cornelius Vanderbilt.

HERBERT, Victor, conductor and composer, born in Dublin, Ireland, Feb. 1, 1859; died May 26, 1924. He was an apt student, received a musical education in Germany, and was made a member of the court orchestra at Stuttgart. In 1886 he accepted a similar position in New York City, where he became highly popular, and afterward played as successor to Gilmore in the Twenty-second Regiment Band. He became conductor of an orchestra in Pittsburg, Pa., and after 1898 played chiefly in New York City. His compositions include "Prince Ananias," "The Fortune Teller," "It Happened in Nordland," "The Singing Girl," "The Wizard of the Nile," and "Babes in Toyland."

HERCULANEUM (hẽr'cŭ-lā'nē-ŭm), an ancient city of Italy, situated about five miles southeast of Naples, near Mount Vesuvius. A vast eruption greatly damaged it in 63 A. D., and in the reign of Titus, in the year 79, it was totally buried by the lava flowing from the volcano. It was entirely forgotten until 1709, when its site was discovered by a well being dug at Pesina. The city lies under from 35 to 100 feet of ashes, but in 1713 some relics were found. In 1738 the first extensive excavations were commenced. Since then much work has been done and many works of ancient art have been secured from the entombed city. Many of the remains, including numerous writings on papyrus, may be seen at Naples.

HERCULES (hẽr'cŭ-lēz), or **Heracles,** a celebrated hero of Greek mythology, son of Zeus and Alcmena, and the great-grandson of Perseus. He was born in Thebes, where he was reared, but incurred the animosity of Hera, who was jealous of all who rivaled her in the affections of Zeus. Alcmena, to protect the child, placed it under the care of a faithful servant, but Hera sent two poisonous snakes that crept unperceived to the cradle of the sleeping child. As these reached the infant, he grasped a snake in each hand and strangled both. Later he was assigned to serve Eurystheus, son of Hera, who placed many difficult tasks upon him, and by them developed great strength.

The tasks are known as the twelve labors of Hercules and comprised the following: 1. To capture alive a wild boar that ravaged the vicinity of Erymanthus. 2. To slay a lion spreading desolation near Mycenae. 3. To clean the stables of Augeas, in which 3,000 oxen had been kept for many years. 4. To capture alive a stag with golden horns and brazen feet, which was noted for its swiftness. 5. To destroy the Lernaean hydra. 6. To capture alive a wild bull in the island of Crete and bring him into Peloponnesus. 7. To kill the birds native to Arcadia, which ate human flesh. 8. To secure from the Queen of the Amazons a girdle she had obtained from Mars. 9. To capture the human flesh eating mares of Diomedes. 10. To obtain the golden apples from the garden of the Hesperides. 11. To bring to Argos the numerous flocks of the monster Geryon, King of Gades. 12. To bring the three-headed dog, Cerberus, from the infernal regions.

Hercules not only did all these tasks, but many others equally celebrated, and aided Zeus in obtaining a victory over the Giants. Afterward he became the slave of Omphale, Queen of Lydia, by whom he was restored to liberty, and ultimately married her. His death resulted from a poisoned robe infected with the blood of the Centaur, Nessus, by which he became crazed. After throwing himself upon the funeral pyre of Mount Oeta, he was carried into heaven, where he became reconciled with Hera and married her daughter, Hebe. In statuary he is represented in many different conditions and stages of life, but is always presented in a form to convey the idea that he possessed great strength and energy.

HERCULES, Pillars of. See **Gibraltar.**

HERCULES BEETLE, a giant beetle of Brazil, remarkable both for its great size and the peculiar head of the male. It is about six inches long. The male has two large horns, the larger of which is upon the head and the smaller upon the thorax. These projections have the appearance of a pair of pincers and are powerful weapons for offensive and defensive warfare.

HERDER (hẽr'dẽr), **Johann Gottfried,** noted author, born in Mohrungen, near Königsberg, Germany, Aug. 25, 1744; died in Weimar, Dec. 18, 1803. He studied under Kant at Königsberg, acquired an extensive knowledge of Oriental languages and literature, and in 1764 became professor at the cathedral school of Riga. Later he lectured on surgery in Saint Petersburg, Russia, but returned to Germany in 1776 to become a minister at Weimar. Here he labored diligently as a writer and to procure moral reforms. He is one of the most prolific of German writers, producing extensive works in literature, history, and poetry. His writings include "Light, Love, Life," "Recent German Literature," "Critical Forests," "Spirit of Hebrew Poetry," "Poems, Songs, and the Cid," and "Philosophy of the History of Man." The last named has been extensively translated and is one of the most valuable productions ever written on that subject. Herder was an associate and friend of Goethe, Wieland, and Jean Paul.

HEREDITY (hē̇-rĕd'ĭ-tȳ), the tendency possessed by animals and plants to resemble the ancestral stock in many essential characteristics. There is in each animal or plant a tendency or peculiarity which causes it to resemble in certain respects the individuals from which it sprang. In animals the resemblance may be either in mental or physical characteristics, or in both, and the similarity may be noticeable in early infancy or may appear as the individual develops by growth and age. Among the more noticeable points of similarity may be mentioned the form and size of the body, the degree of intelligence, the color of the eyes and hair, and the tendency toward industry and activity. In some instances the marked hereditary tendencies may be traced to only one and in others to both parents, or they may originate from one or more generations which precede the immediate parent. Sometimes the hereditary tendencies alternate in the children. However, in all instances some minute differences are certain to arise. These dissimilarities in some cases tend to be reproduced in successive generations, but generally the movement is in a contrary direction, reproducing a reversion to ancestral types. Darwin, Herbert Spencer, Haeckel, and Wallace have written extensively on this subject and have introduced heredity as a doctrine into zoölogical study. See **Embryology, Evolution.**

HEREFORD (hĕr'ē̇-fôrd), a town of England, in a county of the same name, 51 miles south of Shrewsbury. It is on the Wye River and is surrounded by a productive farming and stock country. The chief building is a fine cathedral dating from 1079, having a frontage of 325 feet. It has manufactures of leather, gloves, and hardware. The celebrated Hereford cattle, noted for their meat and production of milk, are native to the vicinity of Hereford. The city has pavements, several fine schools, and railway connections. It was first chartered as a city by King John. Population, 1917, 22,070.

HERESY (hĕr'ē̇-sȳ), a word employed in the New Testament to denote a sect or a school of opinion among the Jews. Mention is made of the heresy of the Sadducees and the Pharisees. Saint Paul, when speaking to Agrippa, said: "After the strictest heresy of our religion I lived a Pharisee." Christianity was spoken of by certain Jews in the beginning of its history as the heresy of Nazarene. Later the term came to be applied to the belief of any person who differed from the standards of the church, though he professed Christianity. The Gnostics were among the first to be called heretics among the early Christians, and Gnosticism (q. v.) continued as a potent influence up to the 6th century. The church maintained a systematic policy of repressing heresy, as the beliefs differing from the dominant church came to be called, up to the time of the Protestant reformation, when the era of religious liberty had its beginning.

It was a common practice for the Roman Catholics to be enjoined in communicating in sacred matters with heretics, and many papal bulls were publicly read in Rome as a warning to the faithful against prevalent error. Pius IX., as late as 1864, issued his celebrated "Syllabus of Errors," in which he condemned as erroneous eighty current opinions. Huss, Wycliffe, and Luther are among the many reformers who were designated as heretics and their teachings in the main were stigmatized as heresies. A long line of persecution was practiced in France, Italy, and Spain from the latter part of the 12th to the 16th century, but greater moderation was shown to those who differed from the dominant church in the states of Germany. Many people were burned or tortured in England on the charge that they were heretics. At present the ecclesiastical authorities may pass upon points of doctrine and declare certain beliefs to be heresy, but no punishment aside from excommunication can be inflicted.

HERING (hā'rĭng), **Ewald,** physician, born in Alt-Gersdorf, Germany, Aug. 5, 1834. He was educated at the University of Leipzig, where he began the practice of medicine in 1860, and subsequently was tutor in medicine at the university in that city and later in Joseph's Academy, Vienna. In 1890 he was made professor of physiology at Prague, but was recalled to Leipzig in 1895. His reputation rests largely upon the investigation of psychophysics and the theory of color, in which lines he made a number of original discoveries and the generally accepted theory of color vision was named after him. His writings are very extensive and possess much scientific merit. They include "Contributions to Physiology," "The Relation of Body and Soul," "On Memory as a General Function of Organized Matter," "Theory of Nerve Activity," Theory of Binocular Seeing," and "Basis of the Theory of Temperature." He died Jan. 26, 1918.

HERKIMER (hẽr'kĭ-mẽr), a village of New York, county seat of Herkimer County, eighty miles northwest of Albany. It is located on the Mohawk River and the Erie Canal and has transportation facilities by the New York Central Railway. The public library contains about 10,000 volumes. It is the seat of the Folts Mission Institute, has a free public library, and maintains a municipal system of waterworks. The manufactures include mattresses, clothing, and machinery. It is surrounded by a fertile farming and dairying region and has considerable trade in merchandise and farm produce. Population, 1905, 6,596; in 1920, 10,453.

HERKIMER, Nicholas, soldier of the American Revolution, born in Herkimer County, New York, about 1720; died Aug. 17, 1777. He descended from German parents, became lieutenant of militia in 1758, and distinguished himself at Fort Herkimer, on the Mohawk, when the fort was attacked by the French and Indians. During the Revolutionary War he rendered valuable service, conducting a successful expedition against Sir John Johnson in 1776, and on Aug. 5, 1777, was mortally wounded in an expedition against Fort Stanwick (now Rome), from which he died twelve days later. In 1884 a beautiful monument was erected to his memory under a joint appropriation of Congress and the Legislature of New York.

HERKOMER (hĕr′kō-mĕr), **Hubert von,** painter and etcher, born in Waal, Germany, May 26, 1849. In 1851 his family came to the United States, but returned to Europe after six years, taking up their residence in England. He studied at the Art School, Southampton, and at the South Kensington Art School, and in 1871 became a member of the British Institute of Water-Color Paintings. In 1873 he chose the town of Bushy, Hertfordshire, as his residence, where he established an art school and organized classes in painting. He made several visits to the United States and opened a studio in Boston, and in 1885 succeeded John Ruskin as Slade professor of fine arts at Oxford. His productions include etchings, wood carving, oil and water-color painting, and work in architecture. Among his paintings are "After the Toil of Day," "God's Shrine," "Gathering in the Charter House," and "The Last Muster." He did excellent work in portrait-painting, among them "Lady in White" and "Lady in Black." "At the Well" is a fine work in water-color. Some of his productions were exhibited at expositions in Berlin, Paris, Chicago, and Saint Louis. He died March 31, 1914.

HERMANN (hĕr′män), **Johann Gottfried Jakob,** educator and philologist, born in Leipzig, Germany, Nov. 28, 1772; died Dec. 21, 1848. He studied at Jena, where he became professor of philosophy in 1798, and was made professor of eloquence at Kiel in 1803. His distinguished ability attracted a large number of students, while his publications cover a diversity of subjects and have had a marked influence upon the educational thought of Europe. He introduced a method of treating Greek grammar that was adopted generally and has modified to a certain extent the theory of teaching Latin and even modern languages. Among his writings are several text-books of German and Greek grammar, a work on philology, and treatises on the works of Homer, Aristotle, and Euripides.

HERMIT (hĕr′mĭt), a person who retires from society to live in solitary contemplation and devotion. The word was probably derived from Paul the Thebaid, who lived for many years as a recluse in the deserts of Egypt, dying there at the age of 113 years. Saint Anthony and other historic characters were imitators of the first hermit and from them the name has gone into general use. The term gave rise to the word hermitage, which is generally applied to the home of some prominent person who lives in retirement and to many places of retreat, as the home of Andrew Jackson near Nashville, Tenn., and Rousseau's retreat in the valley of Montmorency, France.

HERMIT CRAB, the name applied to several species of crustaceans, found most commonly in the tropical seas. Each individual of the family consists of a fleshy mass, and for protection occupies the cast-off univalve shell of suitable size, which it carries until its size is too large, when it takes up its abode in one larger. See **Crab.**

HERMON (hĕr′mŭn), **Mount,** the most elevated mountain of Syria, rising 9,150 feet above the Mediterranean. It belongs to the Anti-Lebanon group. The modern name is Jebelesh-Sheikh. It is mentioned in the writings of Moses by the names Sion and Hermon.

HERMOSILLO (hâr-mō-sēl′yō), a city of Mexico, capital of the state of Sonora, about ninety miles north of Guaymas. It is located in a fertile valley which produces large quantities of cereals and vegetables. The buildings are chiefly of stone and adobe. Among the improvements are a public library, a government mint, and several schools and churches. It is connected with Guaymas, its port on the Gulf of California, with a railway. Population, 1922, 18,250.

HERNE, James A., actor and author, born in Troy, N. Y., in 1840; died June 2, 1901. He began to play with a company in "Uncle Tom's Cabin" in 1859, and soon after made a tour of the leading cities of the United States. His first play, "Hearts of Oak," was produced in 1878. Among his later plays are "Shore Acres," "Drifting Apart," "The Rev. Griffith Davenport," and "Margaret Fleming."

HERNIA (hĕr′nĭ-ȧ), the protrusion of some vital part from the cavity in which it normally belongs. It is due to an unnatural or accidental opening of the walls of the cavity that contains the organ affected. *Rupture* is the common term applied to abdominal hernia, in which the abdominal viscera may become partially or totally displaced. Other organs affected include the heart, the brain, and the lungs, and the protrusions give rise to hernial tumors. Formerly abdominal hernia was entirely neglected by the medical profession, but it is now the subject of careful attention of the most eminent physicians in all countries. The less severe cases can be cured by careful treatment, and temporary or permanent relief may be obtained by wearing a truss or support to retain the organ in its natural position.

HERO (hē'rō), the beautiful priestess of Aphrodite at Sestos. She was met at the festival of Venus and Adonis by Leander, a youth of Abydos, on the opposite shore of the Hellespont. The two became deeply enamored of each other. Every evening Hero placed a lamp in the top of the tower, which served to guide Leander as he swam across the water to meet her. The lamp was blown out one stormy night and Leander perished, and, when Hero saw the dead body, she was overcome with anguish and threw herself into the waves. The story has formed a favorite subject for many excellent productions in literature.

HEROD (hĕr'ŭd), **The Great,** King of the Jews, second son of Antipater, born about 72 B. C.; died in 4. He was a native of Ascalon and was appointed by Julius Caesar as governor of Galilee. Augustus confirmed him in his kingdom after the Battle of Actium, when he immediately began to rebuild the temple at Jerusalem. Not only did he add much beauty to the temple, but likewise improved the city by pavements, gardens, and a stately theater. In the year 4 B. C., immediately following the birth of Christ, the historic massacre of the children of Bethlehem occurred. Later he perpetrated cruelties upon his own family, dissolved the national council, and caused dissatisfaction by appointing and removing high priests without regard to the succession laws. His reign included a period of 37 years.

HEROD AGRIPPA I. See **Agrippa I.**

HEROD ANTIPAS, tetrarch of Galilee, a native of Jerusalem and son of Herod the Great. He became tetrarch of Galilee about 4 B. C., and about the same time married the daughter of Aretas, King of Arabia. Later he divorced her and married Herodias, the wife of his brother, and through this marriage became involved in a war with Arabia. His wife Herodias requested that he behead John the Baptist (Matt. xiv., 3-12). Pilate sent Jesus to him (Luke xxiii). He built the city of Tiberias and adorned and fortified many other places in his province. Caligula finally banished him to Gaul in 39 A. D., owing to a suspicion that he was concerned in the conspiracy of Sejanus.

HERODOTUS (hē-rŏd'ō-tŭs), historian of ancient Greece, born at Halicarnassus, in Asia Minor, in 484 B. C.; died at Thurii about 420. He traveled extensively on the shores of the Mediterranean and visited Scythia, Syria, Palestine, Egypt, Ecbatana, and Babylon for the purpose of studying the geography and general history of the people. Later he returned to his native town, where he wrote his great history, which has given the world a wide range of knowledge regarding ancient peoples, particularly those of Egypt, Assyria, and Babylonia. Most of his life seems to have been spent at Thurii, a Grecian colony in Italy. His works were written in the Ionic dialect. They are noted for their lively grace and vigor and exhibit proof of moral dignity. The abrupt ending of his history gives evidence that he died suddenly. It recounts the contest of Greece with the East, ending with the defeat of Xerxes. His writings have been translated by the great scholars into all the learned languages, and form a valuable portion of the work studied in schools and colleges. He is esteemed by scholars for the marked beauty of his style, the scrutinizing care in treating details, and the narrative method used in detailing historic matters.

HERON (hĕr'ŭn), a wading bird allied to the flamingoes, storks, and spoonbills, belonging to the family *Ardeidae* and the genus *Ardea.*

COMMON GRAY HERON.

The species are numerous and widely distributed. The *green heron* and the *great heron,* sometimes called the *great blue heron,* are native to North America. In all species the bill is sharp, straight, and longer than the head. The common heron has a grayish color, black quill feathers, and a glossy plume, and measures about three feet from the bill to the end of the tail. It builds its nests in trees, but some nest on low bushes, laying three to four eggs. The different species inhabit the vicinity of ponds, marshes, fresh-water streams, and lakes, and abound on the seashore. They feed on insects, frogs, fish, rats, mice, the young of other birds and mollusks. Some species are esteemed for table use, but they are not generally eaten, except by natives.

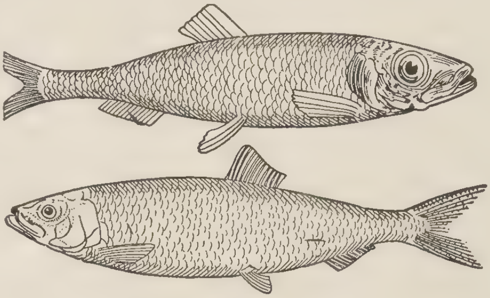
HERO OF ALEXANDRIA, an ancient philosopher of Egypt, mentioned by some writers as Heron of Alexandria. Nothing is known of his birth and death and it is generally assumed that he lived in the 2d century B. C. He is credited with a wide knowledge of hydraulics and pneumatics and the invention of a variety of machines, including the aeolipile, an apparatus used to illustrate the elastic force of air.

HERRERA (âr-râ'rȧ), **Francisco de,** painter, born at Seville, Spain, in 1576; died in 1656. He studied painting with Louis Fernandez, who belonged to the Italian school of painters. Later he developed a style of his own and subsequently became one of the greatest painters of the Seville school. His works are characterized by being bold and powerful, but his subjects are chiefly of a religious nature. He developed much skill as a worker in bronze and was accused of forging money, but Philip IV. pardoned him. Most of his works were completed at Seville, but in 1650 he removed to Madrid, where he died. Among his chief productions are "The Marriage at Cana," "The Last Judgment," "Saint Basil Dictating His Doctrine," "Outpouring of the Holy Spirit," and "Moses Smiting Water from the Rocks."

HERRICK (hĕr'rĭk), **Robert,** poet, born in London, England, Aug. 20, 1591; died in October, 1674. In 1620 he secured a degree at Cambridge, formed a friendship with Ben Jonson, and devoted himself to the writing of poems, of which he produced about 1,200. Among his best known productions are "Hesperides," "Noble Numbers," "Ripe Cherries," "Knight Peace to Julia," "Gather the Rose-Buds While Ye May," and "To the Virgins." The two last named have been set to music.

HERRICK, Robert, educator and author, born at Cambridge, Mass., April 26, 1868. He studied at Harvard University, where he graduated in 1890, and soon after became instructor in rhetoric at the Massachusetts Institute of Technology. In 1893 he was chosen professor of English at the University of Chicago, where he taught with much success for a long term of years. His books include "The Common Lot," "The Web of Life," "The Man Who Wins," "The Gospel of Freedom," and "The Memoirs of an American Citizen."

HERRING (hĕr'rĭng), the name of a large family of soft-rayed fishes, of which the common herring of the North Atlantic is the most valuable. The head is one-fifth its total length. It has small teeth in both jaws. The upper side is blue-green in color and the length is from eight to twelve inches. The herrings are remarkable for rapid propagation. As many as 70,000 eggs have been found in a single female. The travel in schools, live on the small animals of the sea, and are widely distributed. The herring fisheries of the North Sea and the North Atlantic are the most important. There they accumulate in large groups to spawn in the summer months, when they are caught in countless numbers by fishers, and are preyed upon by sharks, seals, whales, and predatory birds. The small eggs are heavy, cling together, and settle on rocks, shells, and other solid surfaces at the bottom of the water. It is thought that the herring used for food subsist mainly on minute crustacea and small fishes. The artificial propagation of herring has attained to much success and is pursued extensively. As a food fish the herring is of much value and is utilized largely for curing as well as for fresh consumption. In Norway the annual catch aggregates 1,000,000 barrels. Other extensive herring fisheries are found off Nova Scotia, Holland, France, New England, and in the North Sea.



HERRING.

HERRON, George Davis, clergyman, born in Montezuma, Md., Jan. 21, 1862; died Oct. 10, 1925. He studied in Wisconsin and held Congregational pastorates in Lake City, Minn., and Burlington, Iowa. In 1893 he was made professor of applied Christianity in Iowa College, Grinnell, which position he resigned in 1900, owing to extensive opposition to his teachings. In the latter year he founded the *Social Crusader,* a periodical devoted to social reforms in Chicago and New York, and made several extensive lecturing tours. His views regarding marriage met with much opposition, owing to which he was deposed from membership in the Congregational Church. His writings include "Christian Society," "Call of the Cross," "A Plea for the Gospel," "Between the Caesar and Jesus," and "The Larger Christ."

HERSCHEL (hĕr'shel), **Caroline Lucretia,** sister of Sir William Herschel, born in Hanover, Germany, March 16, 1750; died Jan. 9, 1848. In 1772 she came to Bath, England, where she assisted her brother by teaching music and later developed an interest in astronomical study. The King of England granted her a salary of $200 a year for assistance rendered in astronomical research. Between 1786 and 1805 she discovered eight comets, five of which were original discoveries. She returned to Germany in 1822. In 1828 she received a gold medal from the Astronomical Society and was similarly honored by the King of Prussia in 1846.

HERSCHEL, Sir John Frederick William, astronomer and physicist, only son of William Herschel, born March 7, 1792; died May 11, 1871. At the age of seventeen he entered Cambridge, where he pursued an advanced course of study, and in 1822 began astronomical observations with the instruments and appliances of his father. By the end of 1833 he had reëxamined the stars discovered by his father and added over 530 nebulae and double stars to the list, of which he published a catalogue. Later he decided to explore the heavens of the south, for which purpose he went to the Cape of Good Hope, and there established an observatory. In 1847 his discoveries were published, the work containing photographic pictures and descriptions of numerous valuable researches. He published "Treatise on the Theory of Light," "Treatise on Sound," "Study of Natural Philosophy," "Astronomical Observations at the Cape of Good Hope," and "Outlines of Astronomy."

HERSCHEL, Sir William, noted German astronomer, born in Hanover, Germany, Nov. 15, 1738; died in Slough, England, Aug. 23, 1822. He was the son of a musician and received a professional education in music in Hanover under the direction of his father. In 1757 he became teacher of music at Leeds, England, but later established himself at Bath, where he became interested in astronomy, and in 1781 discovered a planet by using a reflecting telescope of his own make. Shortly after George III. granted him a pension of $2,000 a year and later knighted him, while Oxford bestowed a degree upon him. In his work he was assisted by his sister, Caroline (q. v.). His discoveries include that of Uranus, the two satellites of Saturn, and the periods of rotation of Venus and Saturn, and the rotation of Saturn's ring. He discovered the constitution of nebulae and of the Milky Way. In 1785 he began the construction of a great telescope. He published many treatises and scientific papers. His chief works include "A Catalogue of Double Stars," "The Comparative Brightness of Stars and Nebulae," and "Information on the Nature of Light and Heat."

HERZEGOVINA (hĕr-tsȧ-gō-vē′nȧ), a province of Jugo-Slavia. It is bounded on the north by Bosnia, east by Montenegro, and southwest by Dalmatia. The area is 3,530 square miles. It is mountainous, the highest peak ranging about 7,850 feet above the sea, and much of the surface is barren and rocky. The valley of the Narenta River, the largest stream, is fertile. Other tracts are fruitful, but the fertile lands are confined chiefly to the valleys. Fruits, grains, tobacco, and live stock are the principal products.

Herzegovina was formerly a part of Dalmatia, but became a dukedom in 1440. The Turks made it tributary in 1463, after which it was a battlefield for many years between the Christians and Mohammedans. It was transferred to Austria-Hungary by the Treaty of Berlin in 1878, in which condition it remained until 1908, when it was annexed as a crown land to the dual empire. Mostar is the capital and chief city. The inhabitants consist mostly of Slavs and Germans. Population, 1922, 203,080.

HESIOD (hē′sĭ-ŭd), a poet of ancient Greece, who lived in the 8th century B. C. He was born at Ascra, near Mount Helicon, a village in Boeotia. It is thought he lived about the time of Homer. His poetry is largely didactic and includes "Shield of Heracles," "Works and Days," and the "Theogony." The last named is a collection of the early fables concerning the birth of the gods.

HESPERIDES (hĕs-pĕr′ĭ-dēz), in Greek mythology, the daughters of Atlas, who dwelt in the far West, but their number is unknown. They were appointed by Hera as guardians to a tree bearing golden apples, which had been presented to her by Gaea when she married Zeus. To kill the dragon that assisted in guarding the apples was one of the twelve labors of Hercules, who took the fruit and brought it to Eurystheus, but afterward Athena restored it. Aegle, Arethusa, and Hesperia are the names generally attributed to the Hesperides.

HESSE (hĕs), or **Hesse-Darmstadt,** a grand duchy of Germany. It is eighth in size among the German states. The area is 2,965 square miles. Hesse-Nassau divides it into two separate portions, the most northern of which is entirely inclosed by that state. The Rhine, Main, and Neckar are the chief rivers. The soil is productive and yields large quantities of cereals, grasses, and fruits, particularly of the vine. Among the minerals are manganese, iron, and peat. The manufacturing industries produce furniture, shoes, chemicals, cotton and woolen goods, machinery, cigars, and leather. Hesse is a hereditary constitutional monarchy and the chief executive authority is vested in the grand duke, who is assisted by three ministers. About 850 miles of railways are in operation, most of which are owned and operated by the government. Darmstadt is the seat of government and Mentz is the largest city. Other cities include Bingen, Worms, and Giessen. In 1567 the landgraviate of Hesse was divided, from which the grand duchy of Hesse originated. It was formed into Hesse-Cassel and Hesse-Darmstadt in 1604. Napoleon enlarged the latter in 1806. In 1866 it was ceded to Prussia as one of the results of the Austro-Prussian War. About two-thirds of the inhabitants are Protestants. Population, 1920, 1,282,219.

HESSE-CASSEL (hĕs'-kȧs'sẹl), a district of Cassel, in the province of Hesse-Nassau, now a part of Germany. The history begins with 1567, when it was organized as a landgraviate by William IV. Napoleon made it a part of the kingdom of Westphalia in 1806, but it was restored to an electorate in 1813. In the Seven Weeks' War it sided with Austria, which caused it to be occupied by a Prussian army, and in 1866 it was incorporated with Prussia.

HESSE-NASSAU (hĕs-năs'sạ), a part of the German Empire, being a province of Prussia, situated between the Rhine and the Weser. It is composed of portions of Hesse-Cassel, Nassau, and Hesse-Homburg. The area is 6,055 square miles. It is generally elevated, but has rich soil and is well fitted for agriculture and forestry. Iron, coal, zinc, lead, and copper are mined extensively. Cassel is the capital. Fulda, Frankfort, and Wiesbaden are flourishing cities and manufacturing centers. Population, 1905, 2,070,052; in 1920, 2,220,956.

HESSIAN FLY (hĕsh'ạn), a small dipterous insect, the larvae of which are exceedingly destructive to rye, barley and wheat. It is about an eighth of an inch in length, the color is brown, the wings are dusky-gray and fringed at the outer sides, and the males are somewhat smaller than the females. The eggs are laid in May and September on young plants, where they hatch after from ten to fourteen days, and the larvae develop into flies in about ten days. The damage to growing crops occurs during the larval state, when the young suck the juices of the joints and roots. In many sections of the country the erroneous view is held that the Hessian fly was brought to America by the Hessians employed by the British in the Revolution, hence the name. The first extensive ravages in America occurred in 1786 and 1789, but since then they have been quite destructive to small grain, except oats, at various times both in America and Europe.

HEWITT (hū'ĭt), **Abram Stevens,** statesman, born in Haverstraw, N. Y., July 21, 1822; died Jan. 18, 1903. After graduating at Columbia College, he was admitted to the bar, and soon after became associated with Edward Cooper, a son of Peter Cooper, in iron manufacturing. The company owned iron works at Trenton, Pequest, Ringwood, and Durham. In 1867 he was commissioner to the exposition at Paris, France, and in 1874 was elected to Congress as a Democrat, serving until 1886, except one term. He was elected mayor of New York City in 1886, defeating Henry George and Theodore Roosevelt, and received a degree from Columbia College in 1887. While in Congress he advocated tariff reform and internal improvements. He is noted for his extensive knowledge of iron manufacturing. In 1901 he was made chairman of the board of trustees of the Carnegie Institution.

HEWLETT (hū'lĕt), **Maurice Henry,** novelist, born in London, England, Jan. 22, 1861; died June 15, 1923. He studied in London and in 1891 was admitted to the bar. Soon after he began to give his attention largely to literary work. His writings exhibit a fine style and sentiment and most of them deal with historical subjects. They include "New Canterbury Tales," "Earthwork Out of Tuscany," "Pan and the Young Shepherd," "Little Novels of Italy," "Forest Lovers," "Madonna of the Peach Tree," and "The Queen's Quir."

HEYBURN, Weldon Brinton, public man, born in Delaware County, Pennsylvania, May 23, 1852; died Oct. 17, 1912. He received an academic education. In 1876 he was admitted to the bar and soon after removed to Idaho, where he established a successful practice. He was a delegate to several Republican national conventions. In 1903 he was elected a United States Senator and was reëlected in 1909. While in Congress he had a place on several important committees, and was a potent factor in promoting legislation to obtain protection against adulterated and unwholesome foods.

HEYSE (hī'zẹ), **Paul Johann Ludwig,** author, born in Berlin, Germany, March 15, 1830. He was educated at Berlin and Bonn, after which he traveled in Southern Europe, where he studied in the chief libraries to supplement his classical training. In 1854 he began to publish novels and dramas, "The Book of Friendship" being his first noted work. Among his publications are several dramas that have met with much favor. His chief writings include "The Bride of Cypern," "Children of the World," "Verses from Italy," "In Paradise," and "Wives of Schorndorf." He made many translations of Italian poetry. His father, Karl Wilhelm Ludwig Heyse (1797-1855), is the author of "A System of Philology" and other works. He died April 2, 1914.

HEZEKIAH (hĕz-e-kī'ah), the twelfth King of Judah. He was the successor of Ahaz, reigning from about 727 B. C. until his death in 698. His reign was successful and in it were built the noted aqueducts at Jerusalem, idolatry was suppressed, and internal improvements were extended. He defended Judah against the incursions of the Assyrians under Sennacherib.

HIAWATHA (hī-ȧ-wạ'thȧ), a mythical personage mentioned in the legends of North American Indians and regarded by them as a protector of their hunting ground. Longfellow made the myth famous in his celebrated poem, "Hiawatha," which is an imitation of the Suomi epic of Finland, known as the *Kalevala*. In doing so he displaced Finnish names and phrases with similar terms of the Indian and English languages. However, this does not detract from the value of the American poem. The following specimens of various translations are given as a means of comparing the style:

Collan translates from the original into the Swedish:

> Så en vacker sång jag sjunger
> Låter goda runor ljuda,
> Sen med rågbröd mig jag mättot
> Och förplägat mig med korn-öl.

The same is translated by Anton Scheifner into German:

> Werd ein hübsches Lied so singen,
> Dass es wunderschön ertöne
> Von dem Bier das ich genossen,
> Von dem schönen Gerstentranke.

John Martin Crawford translates from the original into English:

> These are words in childhood taught me,
> Songs preserved from distant ages;
> Legends they that once were taken
> From the belt of Wainemoinen,
> From the forge of Ilmarinen,
> From the sword of Youkomieli,
> From the bow of Youkahainen,
> From the pastures of the Northland,
> From the meads of Kalevala.

Compare with these the style of Longfellow:

> Should you ask where Nawadaha
> Found these songs, so wild and wayward,
> I should answer, I should tell you:—
> "In the birds' nests of the forest,
> In the lodges of the beaver,
> In the hoof-prints of the bison,
> In the eyry of the eagle."

HIBBING (hĭb′bĭng), a town of Minnesota, in Saint Louis County, eighty miles northwest of Duluth. It is on the Great Northern and the Duluth, Missabe and Northern railways. The surrounding country is rich in timber and deposits of iron ore. It has electric lights, a fine high school, and a number of well-built churches. Recently it has grown rapidly and it has a large trade in merchandise and manufactures. Population, 1905, 6,566; in 1920, 15,029.

HIBERNATION (hī-bẽr-nā′shŭn), the state of torpor in which many animals that inhabit cold or temperate climates pass the winter. On the other hand, in dry and hot countries various animals pass into a similar condition in the hottest season of the year, this state being known as *aestivation.* Many species of insects hibernate, some in the egg, others in the caterpillar, and still others in the chrysalis state. Hibernation is a physiological condition which is favored, but not produced, by cold. In severe winters many hibernating animals perish, since the temperature of their bodies is reduced to nearly the same degree as that of the surrounding atmosphere. Among the hibernating mammals are the porcupine, hedgehog, dormouse, badger, bear, and squirrel. Bats pass almost the entire winter in a state of sleep. Reptiles hibernate in both cold and temperate climates, which is likewise true of many amphibious animals. Among the hibernating reptiles are the tortoises, lizards, crocodiles, and serpents. During hibernation the digestion and respiration are either almost or entirely suspended.

HIBERNIA (hī-bẽr′nĭ-ȧ), or **Iverna**, the name given to Ireland by Julius Caesar and the classical writers. Though the island was never conquered by the Romans, it was well known to them. It is mentioned by Aristotle as one of the two islands situated in the ocean beyond the Pillars of Hercules. Ptolemy described a number of the rivers and harbors and speaks of the island as Juverna or Iverna.

HIBISCUS (hī-bĭs′kŭs), the name of a large genus of plants, including herbs, shrubs, and trees. They belong to the mallow family and are widely distributed in both hemispheres. Many of the species have very beautiful flowers, including several obtained from Syria, which are cultivated extensively as ornamental shrubs in Great Britain and the United States. Another species is a tree native to Florida and the West Indies. It yields material for matting and cordage and the wood is light and useful in manufacturing. The Deccan hemp of India belongs to this class of plants and is useful for its valuable fiber. Other species, mostly tropical, are cultivated for their fruit or seed, or are favorite garden plants because of the beauty of their flowers.

HICCOUGH (hĭk′kŭp), a spasm of the diaphragm and the glottis. The sharp sound which accompanies a hiccough is caused by the rush of air into the larynx. It is usually due to an unusual distension of the stomach, caused by eating rapidly or eating and drinking excessively. Hiccough is a symptom of some diseases, such as gangrene and peritonitis. A mild attack may be overcome by taking long inspirations of air or by drinking water.

HICKORY (hĭk′ȯ-rȳ), the name of several species of forest trees, formerly classed with the natural order *Walnut.* They grow to a great height, frequently 95 feet, and are stately and beautiful. Unless barked, the wood is rapidly damaged by worms, but when cared for is of much value in the manufacture of whip handles, axles, shafts, cogged wheels, and other purposes where a strong and durable wood is serviceable. Among the valuable hickory nuts are those borne by the shagbark, or shellbark, and the pecan, but the wood product of these species is also very valuable. They thrive in many parts of the Mississippi valley and regions farther east. The nutmeg hickory is a species common to South Carolina and elsewhere, but its fruit is of little value. Though an American tree, the hickory has been naturalized and is cultivated in Europe.

HICKS (hĭks), **Thomas Holliday,** public man, born in Dorchester County, Maryland, in 1798; died in 1865. He began a political career at an early age, served in the Legislature of his State, and was Governor of Maryland in 1858-62. Though he sympathized with the Confederates, he endeavored to maintain the neutrality of Maryland with the view of protecting it against devastation by the Federal armies. Later he became a sympathizer of the Federals and Lincoln offered him the rank of a brigadier general in 1862, but he refused owing to ill health. In the same year he was appointed the successor of Senator Pearce and served as a United States Senator the remainder of his life.

HICKS-BEACH (bēch), **Sir Michael Edward,** public man, born in London, England, Jan. 19, 1837. He studied at Eton and Christ Church, London, and in 1864 became a member of Parliament. In 1874 he was made Chief Secretary for Ireland, serving four years, when he became Secretary of State for the colonies. Lord Salisbury made him leader of the House of Commons in 1885, and the following year he again became Secretary for Ireland. In 1895 he was made Chancellor of the Exchequer, but resigned in 1902. The following year he traveled round the world.

HIDES, the skins of animals, especially when considered material for leather or when made into leather. The trade in hides of cattle, horses, and other domestic animals has long been an important industry. At slaughterhouses the hides are removed from cattle, protected by a layer of salt, and transported to the tannery, where they are prepared for manufacture into boots, shoes, harness, belts, and many other articles for which leather is utilized. Formerly the chase supplied large quantities of hides, especially those taken from the buffaloes of North America and the wild horses of South America, but at present the leather used in manufactures is derived almost exclusively from domestic animals.

HIERARCHY (hī′ēr-ärk-ȳ), a form of government administered in the church by bishops, archbishops, and patriarchs, and in a lesser degree by priests. Theological writers apply the name to the whole government and ministry body of the church, but in this sense it can be applied only to the Christian denominations that are ruled by bishops, such as the Anglican church and the Roman Catholic church. The term was applied especially to the papal hierarchy in the Middle Ages, when the Pope exercised both spiritual and civil authority, although he was limited more or less in the latter by councils and princes. In the latter part of the 14th century a powerful movement began against the exercise of hierarchical powers, and the Protestant revolution made possible the separation of the government of the state and the church.

HIERO (hī′ê-rō), the name of two ancient Greek rulers of Syracuse. Hiero I. was a brother of Gelon and succeeded him in 478 B. C. His rule was despotic, but he patronized literature and learning. Pindar, the poet, made famous his successes at the Olympian and Pythian games in several poetic writings. He died in Catana in 467. Hiero II. was a son of Hierocles. He was born about 306 B. C. and died about 216. He was chosen as general by the soldiers in 275 and in 270 became recognized as king. His rule was wise and just and was administered as a constitutional monarchy. He encouraged the democratic tendencies of his time. In the First and Second Punic War he sided with the Romans and aided them materially. After the Battle of Cannae he sent a supply of corn and money to Rome, assisted the city by sending an army against Hannibal, and later presented to the Romans a golden statue of Victory. He was the friend of Archimedes.

HIEROGLYPHICS (hī′ēr-ô-glĭf′ĭks), a term originated by Greek and Latin scholars to describe the writings sculptured on buildings and monuments in Egypt and Babylonia. Subsequently it came to be applied to the writings of other peoples, including the picture writings of the Mexicans, Peruvians, and North American Indians. The name originated because it was thought the Egyptian writings related exclusively to sacred subjects and that they were legible only to priests. All attempts made by Western peoples to read the Egyptian hieroglyphics were abandoned in the 17th century and these writings were wholly unknown until 1799, when the French discovered a stone among the ruins of Fort Saint Julien, near the Rosetta branch of the Nile, which has since been called the Rosetta Stone, and is now in the British Museum. This stone contains an inscription of the coronation of Ptolemy V. and was probably sculptured in 95 B. C. It afforded a key by which the language and writings of the Egyptians became known to European scholars.

Four modes of more or less closely associated ancient writings of the Egyptians are generally recognized. They are known as the hieroglyphic, the hieratic, the demotic, and the Coptic. The *hieroglyphic* is the earliest and is formed by figures of objects with various symbols, most of which are arbitrary or mathematical. Later it assumed the form of a lapidary script and was traced in ink or painted on public monuments. *Hieratic* writing is known as the priestly and contains two symbols. The *demotic* form came into use in the 9th century B. C., and was used in commercial and social relations. *Coptic* writing is a form employed in the more recent period of ancient Egypt. On the Rosetta Stone the inscription is written in both the hieroglyphic and hieratic characters, hence it furnished a key to hieroglyphic writing which enabled scholars to translate extensively from Egyptian monuments.

The hieroglyphics found in Mexico and Peru are thought to have originated from the Aztec kings. Their earlier forms consisted of picture designs, but later they became modified into alphabetical characters. It was thought by Baron Houghton (1809-1885) and Stephan Ladislaus Endlicher (1804-1849) that the Assyrian and Chinese writings rose from the earlier hieroglyphics, and that the cursive forms which now constitute their alphabet were derived from the sculptured forms of objects formerly employed on monuments and in temples. See **Egypt.**

HIGGINS, Frank Wayland, public man, born in Rushford, N. Y., Aug. 18, 1856; died Feb. 12, 1907. He studied in the public schools and in 1873 graduated from the Riverview Military Academy, Poughkeepsie. Soon after he removed to Stanton, Mich., where he engaged in business, and later settled at Olean, N. Y. In 1894 he was elected State senator as a Republican, serving until 1902, when he became Lieutenant Governor of New York. He was elected Governor of the State in 1904, serving until 1907, when he was succeeded by Charles E. Hughes.

HIGGINSON (hĭg'gĭn-s'n), **Thomas Wentworth,** soldier and author, born in Cambridge, Mass., Dec. 22, 1823; died May 9, 1911. He studied at Harvard University and entered the ministry, but in 1850 became interested in antislavery agitation with Wendell Phillips, Theodore Parker, and other public men of that period. He joined the free state forces in Kansas in 1856, where he served as brigadier general, and later was enthusiastic in the support of the Union during the Civil War. In 1862 he was made captain in a Massachusetts regiment, and soon after became colonel of the first regiment of freed slaves. While operating in Florida in 1863, he was severely wounded, compelling him to retire from the service. In 1880-81 he served in the Massachusetts Legislature, contributed to the *Atlantic Monthly,* and later wrote many works of historical and general interest. His writings include "Army Life in a Black Regiment," "Book of American Explorers," "Charge with Prince Rupert," "Woman and Her Wishes," "Young Folks' History of the United States," "Men and Women," and "History of the United States." He held the position of State historian of Massachusetts for many years.

HIGH PRIEST, the principal religious dignitary in the hierarchy of the Jews. Aaron was the first high priest and from him the office succeeded to Eleazer, his eldest son, and thence to his successor. The Mosaic law provided that the office be held for life. It vested in the high priest the duties of overseeing the sanctuary. The high priest had charge of the service and the treasure and entered the Holy of Holies on the Day of Atonement. About the beginning of the Christian era conflicts began to arise between the civil and ecclesiastical authorities, hence the office ceased to be hereditary and the high priests were appointed or removed by the civil rulers. The pontificate in the time of the Maccabean princess reached its highest brilliancy, since they joined regal to priestly authority in the exercise of the office.

HIGH SCHOOL. See **Education.**

HIGHWAY, the road or way over which the public generally has a right to pass. In popular usage the term is restricted to ways or roads upon land, such as are used by pedestrians and vehicles, but in law it is applied to all ways that are open to public convenience, including paths, roads, streets, bridges, canals, ferries, public squares, and navigable streams. In English law it is usually called the king's highway, since by the theory of that law it was considered as having been originally given by him. Vehicles meeting in a highway in England are supposed to turn to the left, while in the United States the teams are expected to turn to the right. The law has recognized this rule to a certain extent, and proof of a violation in case of accident is quite essential where action is brought for damages.

A highway may be created by an act of government, as in the case where a new country is laid out for settlement, when the highway is located on the section line and is usually 66 feet wide. New highways may be established in a section of country already settled either by condemnation or by dedication. In the former case it is located by the civil authorities and the owner of the land is compensated according to its value, and in the latter instance the land is given free by the owner of the property, though it does not became a public highway until it is legally accepted by the proper officers. In case property is used as a highway for a considerable length of time to the knowledge of the owner, it becomes a highway through such use and cannot afterward be closed. Formerly extensive interstate or national roads were maintained, but the practice has been abolished very largely since the building of railways, and the authority over highways at present is vested in the smaller political divisions, such as the parish, town, or county. Though the public is permitted to use the whole or any part of a highway, the property right is usually vested in the owner of the abutting land and in case the highway is vacated it reverts to him. Those obstructing a highway are liable to a fine and imprisonment, or both, and in most instances legal restrictions limit the use to some extent, such as prohibiting stock to remain on the same without an attendant. It is unlawful to drive with horses faster than a walk, or more than a certain number of head of stock at one time across the larger bridges.

HILDEBRAND (hĭl'dē-brănd), **Hans Olaf,** archaeologist, born in Stockholm, Sweden, April 5, 1842; died in 1908. His father, Bror Emil Hildebrand (1806–1884), was eminent as a writer, and gave him the advantage of a liberal education in the University of Upsala, where he graduated in 1866. He was made state antiquarian and secretary of the Swedish Academy of Literature in 1879, in which position he served efficiently a long period of years. His writings are devoted largely to history and prehistorical archaeology, some of which have been widely translated. They include "Antiquarian Journal for Sweden," "Swedish People during Pagan Times," "Prehistorical Nations of Europe," "Life in Iceland during the Saga

Time," "Mediaeval Sweden," and "From Ancient Times."

HILDRETH (hĭl'drĕth), **Richard,** historian, born at Deerfield, Mass., June 22, 1807; died July 11, 1865. He studied at Harvard, where he graduated in 1826, and soon after began to practice law in Boston. In 1832 he became editor of the Boston *Atlas,* then a leading political newspaper, but in the meantime commenced to write historical works. He resided in Demerara, British Guiana, from 1840 until 1843, where he edited journals devoted to free labor. His chief works include "The White Slave," "Theory of Politics," "History of the United States," "Life of W. H. Harrison," and "Japan as it Was and Is."

HILL, Ambrose Powell, soldier, born in Culpepper County, Virginia, Nov. 9, 1825; slain in battle at Petersburg, April 2, 1865. In 1847 he graduated at West Point, served in the Mexican War as lieutenant of artillery, and later took part against the Seminole Indians in Florida. He supported Virginia when it seceded in 1861, entering the service as colonel, and for bravery at the Battle of Bull Run was promoted brigadier general. Gallantry at Williamsburg in 1862 caused his promotion to the rank of major general. For gallantry at Chancellorsville, in 1863, he was made lieutenant general, and received command of one of the three divisions into which the southern army was divided. His services were especially efficient at Cedar Mountain, Antietam, Gettysburg, and Petersburg, commanding at the last named city during its siege. While reconnoitering at Petersburg, he was shot from his horse and died immediately.

HILL, Benjamin Harvey, statesman, born in Jasper County, Georgia, Sept. 14, 1823; died Aug. 19, 1882. He graduated at the University of Georgia, practiced law, and became prominent as a statesman. In 1875 he was elected to Congress, was reëlected in 1876, and shortly after was chosen United States Senator. He made several memorable speeches. He published "Notes on the Situation," in which he denounced the reconstruction policy of Congress. A statue was erected to his memory at Atlanta in 1886.

HILL, Daniel Harvey, soldier, born in South Carolina, July 12, 1821; died Sept. 25, 1889. He graduated at the West Point Military Academy in 1842, served with distinction in the Mexican War, and for gallant service was brevetted major. In 1849 he became professor of mathematics in Washington College, Virginia, and subsequently held a similar position in Davidson College, North Carolina. In 1861 he entered the Confederate service, when he took part in the Battle of Big Bethel, and later fought against McClellan in the Peninsular campaign. He was made lieutenant general by President Davis in 1863 and commanded a corps at the Battle of Chickamauga. Subsequently he fought under General Johnston and in 1865 surrendered at Durham Station.

HILL, David Bennett, statesman and lawyer, born in Havana, N. Y., Aug. 29, 1843. After receiving an academic education, he studied law, and was admitted to the bar the following year. In 1864 he was elected city attorney for Elmira as a Democrat and in 1871 became a member of the State Legislature. Subsequently he was mayor of Elmira, became Lieutenant Governor in 1882, and succeeded to the office of Governor when Grover Cleveland became President. He was elected Governor in 1885 and 1887 and was chosen United States Senator in 1891. In 1904 he gave hearty support to Alton B. Parker for President and in 1908 supported William J. Bryan for that office. He died Oct. 20, 1910.

HILL, David Jayne, educator, born at Plainfield, N. J., June 10, 1850. He graduated at Bucknell University, Pennsylvania, where he was professor of rhetoric for two years, and in 1879 became president of that institution. In 1888 he was made president of the University of Rochester, from which he resigned in 1896 to study law and diplomacy for three years. He was appointed minister to Switzerland in 1903, serving two years, and in 1905 was made minister to The Netherlands. In 1907 he was appointed ambassador to Germany. His writings are very numerous, including works and addresses both in English and German. Among his books are "Elements of Psychology," "Life of Washington Irving," "Principles and Fallacies of Socialism," "International Justice," "Social Influence of Christianity," and "A History of Diplomacy in Europe."

HILL, James J., capitalist, born near Guelph, Ontario, Sept. 16, 1838. He descended from Scotch-Irish parents and at an early age left his father's farm for a business life in Minnesota. In 1856 he became an employee in a steamboat office in Saint Paul and was made an agent of the Northwestern Packet Company in 1865. Five years later he formed the Red River Transportation Company, which conducted a line of communication between Saint Paul and Winnipeg. He helped to organize the syndicate that built the Canadian Pacific Railway and in the meantime obtained control of the Saint Paul and Pacific Railroad Company, which he reorganized. The latter became the nucleus of the Great Northern system, which operates lines from Saint Paul and Lake Superior to Puget Sound and has many

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branches both north and south in the general system. He was the chief promoter of the Northern Securities Company (q. v.) and a steamship line between America and important ports of Asia. He died May 29, 1916.

HILL, Robert Thomas, geologist, born in Nashville, Tenn., Aug. 11, 1858. He graduated at Cornell University. In 1902 he was connected with the expedition to Martinique. His writings include "On Occurrence of Artesian and Underground Waters in Texas," "Cuba and Porto Rico with Other Islands of the West Indies," and numerous reports on geology to the government.

HILLIS, Newell Dwight, clergyman, born at Magnolia, Iowa, Sept. 2, 1858; died Feb. 25, 1929. He studied at Iowa College and McCormick Theological Seminary, and in 1878 became a Presbyterian minister at Peoria, Ill. In 1890 he was pastor at Evanston, Ill., and four years later succeeded David Swing as minister of the Central Church, Chicago. He became pastor of the Plymouth Church, Brooklyn, in 1899. As a pulpit orator he has a high reputation and has been greeted by large audiences on the lecture platform in Canada and the United States. His books include "The Investment of Influence," "Quest of Happiness," "Foretokens of Immortality," "How the Inner Light Failed," "A Man's Value to Society," "Great Books as Life Teachers," and "Success Through Self-Happiness."

HILLSBORO (hĭlz'bŭr-ō), a city in Texas, county seat of Hill County, in the central part of the State. It is on the Saint Louis Southwestern and the Missouri, Kansas and Texas railroads. The chief buildings include the county courthouse, the high school, and an academy. Among the manufactures are textiles, novelties, candy, clothing, machinery, and cottonseed oil. It has electric lights, waterworks, and a considerable trade in live stock, cereals, and merchandise. Population, 1920, 6,952.

HILLSDALE, county seat of Hillsdale County, Mich., 90 miles southwest of Detroit, on the New York Central Railroad. It has brick paving, electric and gas plants, machine shops, flour mills, and a brisk trade. The features include the courthouse, postoffice, city hall, public library, high school, and Hillsdale College. It was settled about 1835 and incorporated in 1850. Population, 1920, 5,476.

HILO (hē'lō), a seaport and the largest city of the island of Hawaii, situated on Hilo Bay. It is the second city of the Hawaiian Islands, being exceeded in size only by Honolulu. The noteworthy buildings include the customhouse, the public library, the courthouse, and several fine schools. It has delightful drives and is ornamented by tropical plants and parkings. The city has a large trade in fruit, rice, fish, sugar, and coffee. Many of the inhabitants are Americans, but the natives and Chinese predominate. Population, 1922, 21,078.

HIMALAYA (hĭ-mä'lȧ̂-yȧ), meaning snow abode, the most elevated mountain system in the world, situated in the southern part of Asia. As a whole the system contains several parallel ranges, which have a length of about 1,500 miles and an average width of 180 miles. The Himalayas form a natural boundary between Tibet and India, contain numerous fertile valleys, and are the source of many important rivers, among them the Brahmaputra, Ganges, Indus, and Ghara, which belong to the watersheds tributary to the Bay of Bengal and the Arabian Sea. The general height of the Himalayas is approached only by the Andean system of South America. They contain the most magnificent snow-capped peaks in the world. The highest elevations are Mount Everest, 29,002 feet, the highest mountain in the world; Mount Godwin-Austen, 28,250 feet; Kunchinginga, 28,160 feet; Dhwalagiri, 26,825 feet; and Nanda-Devi, 25,675 feet. Other peaks are thought to be as high or even higher than Mount Everest, but their exact altitude has not been ascertained. The geological structure consists largely of granite, with important deposits of mica slates and gneiss. Metamorphic rocks and more recent alluvial deposits occur at the lower slopes, while the entire region is rich in zinc, coal, copper, iron, petroleum, gold, and silver.

HINCKS, Sir Francis, statesman, born in Cork, Ireland, Dec. 14, 1807; died Aug. 18, 1885. He came to Canada in 1832 and settled at Toronto, where he edited the *Examiner*. In 1841 he was elected to the Dominion Parliament as a Liberal and was chosen Premier in 1854.

HINDENBURG, Paul Ludwig von, general, born at Glogau, Silesia, in 1846. He studied military tactics at Glogau and Wahlstatt. In 1866 he served against the Austrians in the Battle of Königgrätz (Sadowa), which turned the tide of the war. He again saw active service at Metz and Sedan and before Paris in 1870, and subsequently studied military tactics at Berlin. In 1914 he was called by the Emperor to command against the Russians, defeating them at Tannenberg, the Mazurian Lakes, Ivangorod, Warsaw, and on the Pilica. The first year of the war the Russians lost about 500,000 prisoners and as many killed and wounded in the campaigns waged by von Hindenburg. In 1915 von Hindenburg and von Mackensen, leading the German-Austrian forces, drove the Russians out of Poland. In 1917 he was made supreme commander. He was elected president in 1925.

HINDU-KUSH (hĭn'dōō-kōōsh), a system of mountains in Central Asia, lying west of the Himalayas, of which the Hindu-Kush form a continuation. The Indus River passes between them and the Himalayas. Their breadth is about 200 miles and the length is 370 miles, separating Afghanistan from British India. Hindukoh, north of Cabul, is covered perpetually with snow and is regarded the culminating peak. Its height is 20,225 feet. Several tributaries of the Oxus River rise in the northern slopes of the Hindu-Kush, and from the southern slope flow the Helmond and the Cabul.

HINDUSTAN (hĭn-dụ-stän′), a name applied to the Punjab and Ganges valley. It is frequently, but less correctly, used to describe the whole of British India. See **India.**

HINES, Edward Warren, public man, born in Butler County, Ky., Jan. 15, 1858. He studied law, practiced in the courts of Kentucky, and in 1914 became a member of the Interstate Commerce Commission. In 1918 he succeeded William G. McAdoo as director-general of railroads.

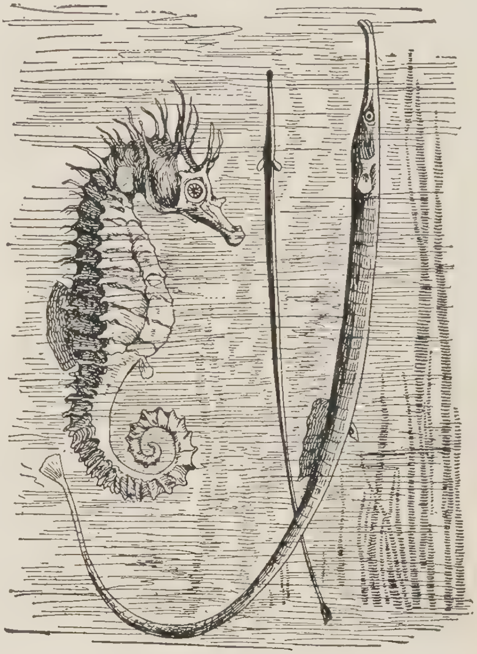
HINKSON, Katharine Tynan, novelist, born in Clondalkin, Ireland, Feb. 3, 1861. She studied at the Dominican Convent of Saint Catherine of Sienna and Drogheda, Ireland, and in 1893 married H. A. Hinkson. Soon after she took up her residence in London and devoted attention to literature. Her novels include "Three Fair Maids," "A Daughter of the Fields," "A Cluster of Nuts," "A Dear Irish Girl," "A Girl of Galway," and "A King's Woman." She is known by a number of poems, which include "Cuckoo Songs," "Shamrocks," "Wind in the Trees," "Ballads and Lyrics," and "Collected Poems."

HINSDALE, Burke Aaron, educator, born in Wadsworth, Ohio, April 31, 1837; died Nov. 29, 1900. He was a pupil of James A. Garfield at Hiram College and in 1861 entered the ministry of the Christian Church, holding pastorates at Solon and Cleveland. In 1866 he was assistant editor of the *Christian Standard,* became professor of history and English literature in Hiram College in 1869, and was made professor of science in the University of Michigan in 1886. As a writer on educational topics he did much to improve schools and teaching.

HIPPARCHUS, tyrant of Athens, son and successor of Pisistratus, born about 555; died in 514 B. C. He was a friend of art and literature, in which respect he supported the work done by his father and his predecessors. He was killed by Harmodius and others as an act of revenge.

HIPPOCAMPUS (hĭp-pō-kăm′pŭs), or **Sea Horse,** a genus of fish allied to the pipefishes, of the suborder *Syngnathi,* found in the Mediterranean and the Atlantic. The head bears a curious resemblance to the head of a horse, and, when swimming, is held in a nearly vertical position. Several species have been described, most of which have a length of from seven to twelve inches. The young are hatched and reared for a time in a marsupial sack under the tail of the male. Several species are described in fables as monsters consisting of half horse and half fish.

HIPPOCRATES (hĭp-pŏk′rȧ-tēz), celebrated physician of antiquity, the most distinguished among the Greek medical scholars, born in the island of Cos, about 460 B. C.; died in Larissa, Thessaly, about 375. He was the son of Heraclides, also a physician, and was instructed in medicine by his father and several others eminent in medicine and philosophy. Besides practicing and instructing in medicine, he traveled extensively in Greece, and finally settled at Larissa, where he remained until his death. His writings cover a wide range of subjects and were quoted by both Plato and Aristotle. Numerous productions are variously attributed to him, but only a comparatively few are definitely known to have emanated from his pen, among them "Aphorisms," "De Morbis," "Popularibus," "Prognosties," "De Capitis Vulneribus," and a number of others. As a practitioner Hippocrates exercised much care in regard to nursing and diet. He is credited with remarkable skill in diagnosing. Various writers assert that he held to the theory of critical days in the course of diseases, and that he practiced auscultation. In his writings and practice he gave marked attention to a consideration of the importance of pure air, water, and food. He exercised much care in regulating the diet of persons afflicted with acute diseases and treated wounds with the view of guarding against the undue loss of blood.



SYNGNATHI.
Hippocampus. Pipefishes.

HIPPODROME (hĭp′pō-drōm), a word applied by the Greeks to the place where horse and chariot races were given for public exhibition. The hippodrome at Constantinople in the Byzantine period was especially noted and corresponded generally to the Roman circus. Olympia had a hippodrome which was 350 feet wide and nearly a mile long. In modern times the name is associated with the circus, but differs from it in that the exhibition consists mainly of horse and chariot racing and gorgeous displays by large vehicles.

HIPPOPOTAMUS (hĭp-pŏ-pŏt′ȧ-mŭs), the river horse of Africa, a genus of a family of ungulates, which contains only two living species. One of these is large and occurs in the swamps, rivers, and lakes of Africa, while the smaller species is found principally in the vicinity of Lake Tchad and the rivers flowing into the Atlantic Ocean. The larger species is characterized by a large head, small eyes and ears, a thick skin, few hairs, and a reddish fluid exuding from the skin. It delights to swim and dive in the waters of lakes and rivers and feeds on the plants growing in or near the water. In ancient times it was found in Lower Egypt, but its tendency to interfere with tilled fields has caused it to be driven from the cultivated portions. The size of the body is large, being next to that of the elephant, but its legs are very short; hence, it appears much smaller. While the length is often seventeen feet, it stands only from four to six feet high. The feet are small, the hoofs are short, and each foot has four toes. The flesh is esteemed as food and is sought by the natives, who capture the animal by arranging pits from which escape is impossible. The feet and tongue enter into the manufacture of jelly, while the teeth furnish ivory, and the hide is serviceable for leather of a heavy kind. When not pursued, it is peaceable and apparently indifferent, but when attacked it becomes dangerous. Fossils of this animal do not occur in America, but there are remains of several extinct species both in Europe and Asia. Commentators on the Bible regard the behemoth mentioned by Job to be the hippopotamus now found in Africa.

HIPPOPOTAMUS.

HIROSHIMA (hē-rŏ-shē′mȧ), a commercial city of Japan, in the province of Aki, at the southwestern extremity of the island of Hondo. It is about three miles from an inlet of the Seto Uchi, has railroad and electric railway facilities, and is the seat of several fine temples and schools. The manufactures include clothing, carpets, furniture, metal wares, and lacquered products. It has a large domestic and foreign trade. Population, 1922, 161,196.

HIRSCH (hẽrsh), **Emil Gustav**, clergyman, born in Luxemburg, Germany, May 22, 1852. His father was a prominent Jewish theologian with whom he came to the United States in 1866. He studied at the University of Pennsylvania and did postgraduate work at Berlin and Leipzig in 1872. In 1877 he was made rabbi of a synagogue in Baltimore, the following year accepted a like position in Louisville, Ky., and in 1880 he became minister of the Sinai congregation in Chicago. His position on public and theological questions is characteristic for liberality, and as a writer and lecturer he has been influential in advancing the Jewish religion. He was president of the public library board in Chicago in 1888-97, and was chosen professor of Jewish literature in the University of Chicago in 1892. Besides contributing to periodical and current literature, he published a volume of sermons and "Truths of Fiction." He died Jan. 7, 1923.

HIRSCH (hĭrsh), **Maurice, Baron,** financier and philanthropist, born in Munich, Germany, in 1831; died in Pressburg, Austria, April 20, 1896. After securing an education, he married the daughter of a wealthy senator of Belgium, and by able financiering accumulated a fortune valued at $200,000,000. The untimely death of a son caused him to devote $20,000,000 to charity, and later he made benevolent appropriations of $100,000,000 to aid educational and charitable enterprises in Germany, Hungary, Russia, Galicia, and Rumania. In 1891 he founded a community of 700 Russian exiles at Woodbine, N. J., each family of which received thirty acres of land and the necessary farming implements. His wife, Baroness Clarade de Hirsch, died in Paris, France, April 1, 1899. At the death of her husband, in 1896, her fortune was estimated at $200,000,000, with an annual income of about $20,000,000. She continued the benevolence of her husband and devoted the bulk of her vast estate to the purpose of aiding in charities. Among the charitable enterprises is the Hirsch Fund, a fund amounting to $2,400,000, which is invested in United States securities and the net income, about $10,000 a month, is loaned to immigrants of Jewish extraction.

HISTOLOGY (hĭs-tŏl′ō-jȳ), the branch of science which classifies and describes the microscopical structure of living organisms. It is subdivided into *vegetable histology,* which treats of the tissues of plants; *comparative histology,* which treats of the tissues of the lower animals; and *human histology,* which treats of the tissues of man. The history of this science dates back to an early period in the Christian era, but very little progress was made until the early part of the 19th century, when the compound microscope and the camera enabled scientists to make important investigations. These instruments were the means of discovering the nature of cell structure as well as that of the tissues, and the camera proved especially useful in preserving the result of the investigations made by scientists. Since most of the diseases are due to some disorganization of the cells, it has been possible to determine the effect of many ailments by bringing the tissues and glands under the microscope at different stages, then preserving the records by means of the camera.

HISTORY (hĭs′tō-rȳ), a systematic record or narration of events and circumstances relating to man, especially those having reference to his social and political conditions. In giving a record of the past it treats of facts concerning both nations and individuals, tracing to some extent the causes of the present condition of different peoples. As to accuracy, the facts related depend remotely upon contemporary witnesses and various circumstantial evidences. Although history as now understood is preserved in written form and is being added to constantly, it need not necessarily be committed to writing, as historic facts may be passed from generation to generation in the nature of story, when it is called *tradition.* This is substantially the form common among barbaric peoples, a circumstance due to their primitive mode of life and the absence of both desire and ability to preserve a written record of events. However, authentic history dates only from the invention of writing, whether uncial or cursive.

The ancients used hieroglyphic characters to inscribe important events on monuments, tombs, and temples. By them we have come into possession of valuable information touching their political and social life. However, ancient history as known to us is limited to a few nations and to a comparatively small area of the surface of the earth. The regions included comprise Northern Africa, Southern and Western Asia, and Southern Europe; the history connected with the other portions of these grand divisions is either mediaeval or modern. There are evidences that America and Australia, as well as all the continents, were inhabited in the remote past, but our knowledge of the peoples occupying these regions is limited to the information obtained from fossil remains and ruins of temples and dwellings. This is true particularly of portions of America and Europe. It is evidenced in many remains met with in Peru, Mexico, and the Mississippi valley in America, and in various cliffs and lakes of Europe. Modern history is not only more extensive than that coming to us from the preceding periods, but it is vastly more accurate. This is due at least partly to the circumstance that early peoples studied to make their records artistic rather than instructive.

Writers have divided history into various classes, these serving to detail information according to style in writing or as related to time. *Chronological history* is a record of successive times, *narrative history* is a story of events or a series of events, and *philosophical history* considers the causes of events and traces their results. History is sometimes classed as *sacred* and *profane,* the former being the history recorded in the Bible and the latter that of secular events. As to time, history is either ancient, mediaeval, or modern. *Ancient history* ends with the fall of the Western Roman Empire, in 476 A. D., including Jewish, Oriental, Greek, and Roman history. *Mediaeval history* closes with the revival of learning and the Protestant Reformation, in 1517. *Modern history* includes the period from 1517 to the present. *Biographical history* treats of the lives of individuals.

HISTORY, Methods of Teaching, the orderly process or procedure by which to give instruction in the facts and events of history. The purposes are to stimulate patriotism and to give information concerning the development and the underlying principles upon which nations are established. Other objects are to strengthen the character, train the judgment, and direct the reading of the students.

INTEREST. The first essential step in teaching history is to arouse interest. Students are interested in that of which they know something. One of the fundamental principles of pedagogy is to "proceed from the known to the unknown." It is a mistake to employ an overwhelming list of books to begin with. One book at a time and that the *right* one is a wholesome motto. In many instances it is well to vary from the chronological order, although the general method is to begin with the ancient history and drift down to modern times. While the usual plan is to teach modern history by reading backward from effect to cause, it may be said that to proceed from cause to effect appears to be fully as pedagogical. In general, the instructor should seize upon that which is already known as the starting point and thus proceed to the unknown, irrespective of whether the reasoning is onward from cause to effect or backward from effect to cause. However, with children it is more philosophical to begin with modern history, especially with that of our own country, rather than with that of Europe, mediaeval or ancient.

PRIMARY WORK. In the primary grades the teaching should be oral and the instructor should exercise skill and tact in presenting stories from history. When the learner enters school at about the age of six years, he may receive a bias from history which will avail much in his future life. He may be taught to tell the teacher in what town, in what county, and in what country he lives. Later may follow instruction as to who the chief executive officers are, where the capital is located, and what certain lines and illustrations on maps mean. These simple points, repeated until they are fixed in the memory, may seem of little consequence, but they invariably stimulate thought. They suggest local, state or provincial, and national government. Later may be added pleasing anecdotes from the lives of distinguished men, such as the exploits of Captain John Smith, the voyages of Columbus, and the adventures of La Salle and Daniel Boone. In this connection it is more essential to dwell upon the explorations, developments, and inventions than upon the achievements and contentions of war. Action is the keynote of history and implies actors who do things. Brief sketches from the lives of Washington, Lincoln, and other distinguished Americans lend interest in studying the events which have an important influence in training for citizenship.

The work in the primary grades should lead up to the grammar school course. This implies that a line of supplementary reading may be placed in the hands of the students, making it possible to articulate the instruction in the lower grades. Suitable books for this purpose include Johonnot's "Stories of Our Country," Mowry's "American Inventions" and "American Pioneers," Coffin's "Boys of '76" and "Boys of '61," and Hale's "The Man Without a Country." Regular text books well suited for this work should be afterward introduced, including Mowry's "First Steps in the History of Our Country," Eggleston's "A First Book of American History," or Channing's "First Lessons in United States History."

GRAMMAR GRADES. The larger part of teaching history is done in the higher grades of the grammar school. Very properly, it consists almost everywhere in the study of the history of our own country. This requires both a good text book and a skillful teacher. In order to arouse real enthusiasm, it is well to have a half dozen or more different books, besides the use of supplementary work drawn from the reference department of the school library. Happily, the recent texts abridge the stories of wars and devote a larger amount of space to the triumphs of peace. However, care should be taken to discriminate between important paragraphs and those of less value. Facts are to be learned in their relations and care is to be taken that the words of the text are not memorized. Regular sequence of facts in chronological order is not enough. Relations of one fact to others and a strong grasping of cause and effect should be clearly pointed out. Maps and pictures are of much importance, especially as they fix localities and the early customs in the mind, but the intelligent use of reference books is relatively essential. As a whole the work in the grammar schools should lay a broad and liberal foundation for general work in history in the higher institutions of learning.

ACADEMIC AND HIGHER WORK. A general outline of ancient and mediaeval history should be pursued in the high schools and academies, especially in connection with the study of the ancient languages. While the higher institutions have agreed upon the general plan of studying history, many colleges and universities, as well as many individual professors, have specialized methods for particular branches or divisions of the course. The purpose is not merely to become acquainted with the achievements of men in past times, or to study cause and effect, although these are important matters, but in addition to observe the various degrees of civilization and enlightenment through which the human race has passed in reaching the present stage. Here the study of the uplift of humanity becomes of vital importance. Indeed, whatever in history shows the progress of mankind, the steady advancement of the human race, is worth studying, and ordinarily only that.

DATES AND OUTLINES. The important dates should be memorized by the student, but too large a number sometimes confuses the learner. Such important dates as the discovery of America by Columbus, the English settlement at Jamestown, the landing of the *Mayflower* at Plymouth Rock, the expedition of Braddock, the capture of Quebec by the English, and the surrender of Burgoyne at Saratoga are among those that can profitably be memorized. In order to teach both dates and the general facts of history, the instructor should place outlines of the subjects upon the blackboard as the study proceeds from day to day. These outlines are to be constructed so as to embrace the important facts of the lesson in chronological order, giving the important names, dates, causes, effects, etc. Each lesson should include a brief review of one or more previous lessons and suggest facts for study in the lesson to be assigned for the succeeding day.

MIGRATIONS. In the study of general history it is well to emphasize the fact that migrations promote civilization. The four distinct movements in very ancient times of large bodies of people toward the west, from the banks of the Indus, in Asia, to Europe are notable examples. From these sprang the Celtic, Teutonic, Pelasgic, and Slavic peoples who produced the civilization of modern Europe. Then we may notice the great migration of from two to three centuries ago from Europe to North America, especially to the French and English colonies, which later gave rise to the United States and to the Dominion of Canada. Although the immigrants came from different countries and spoke a number of languages, they were brought together and eventually formed two of the largest and most enlightened countries in the world. At first these migrations peopled the Atlantic slope and the valley of the Saint Lawrence, but they moved westward across the plains and over the Rocky Mountains to the Pacific Coast. They were a hardy set, owing to the life of exposure which they had lived in the eastern section of the country. To the early pioneers and their descendants were added many thousands who came directly from Great Britain, Ireland, Germany, France, Sweden, Norway, Denmark, and Austria. Later a large stream of immigrants came from countries of Southern Europe, including Italy and Portugal, and many immigrated from Russia, Japan, and other countries. Although at first heterogeneous in language and customs, these peoples are becoming welded together under the American system of education into a homogeneous whole.

Peace Rather Than War. Although the essential campaigns and battles should be understood, it is of vitally more importance to study the causes leading to the wars and the results of these conflicts upon the nation. One campaign, as that of Burgoyne in the Revolutionary War, may be taken as a type and the others studied less exhaustively. Hitherto text books of history magnified the periods of war and neglected the triumphs of peace. The newer books have been improved by shortening the descriptions of campaigns and dwelling more upon the progress made in times of peace. They have added chapters or divisions on railroad and steamboat lines, canals and jetties, under land and water tunnels, wireless telegraphy, subways and elevated railroads, passenger and freight elevators, sewing machines, commerce and mining, and many other inventions and industries. It may be shown that we have attained a higher position in creative art and many of the sciences than any country of the world in the same period of time. This fact of history in our nation may well be emphasized in teaching youth in our schools. In connection with this it may be observed that the civilized world has made material progress in developing the spirit of universal, international peace, and that the different nations now regard each other as members of one vast family, rather than conflicting and antagonistic countries. All this has been stimulated by the modern development of commerce and the more liberal education of the masses.

HITCHCOCK (hĭch′kŏk), **Edward,** geologist, born in Deerfield, Mass., May 24, 1793; died Feb. 27, 1864. He was self-educated and in 1815 became principal of Deerfield Academy. Soon after he began to compile for the *Nautical Almanac* and for four years he was pastor of a Congregational church at Conway. In 1825 he became professor of chemistry and natural history in Amherst College, where he taught successfully until 1844, when he was made president of that institution, but continued to teach geology. His administration of the college was singularly successful, and when he resigned as president he continued the professorship of geology. He was the first president of the American Geological Society, and was one of the founders of the Massachusetts Agricultural College. His writings include "Religion of Geology and Its Connected Sciences," "Geology of the Connecticut Valley," "A Wreath for the Tomb," "Reminiscences of Amherst College," and "Religious Truths Illustrated from Science."

HITCHCOCK, Ethan Allen, public man, born in Mobile, Ala., Sept. 19, 1835. He attended private schools in Nashville, Tenn., and in 1855 engaged in the mercantile business in Saint Louis, Mo. Five years later he entered the commission house of Olyphant & Co., in China, of which firm he became a partner in 1866, and six years later retired from business to spend several years in Europe. On returning to the United States, he engaged in manufacturing and mining enterprises, and in 1898 became the ambassador to Russia. President McKinley made him Secretary of the Interior in 1898, in whose Cabinet he served until 1901, when he was reappointed to the same position by President Roosevelt, who again reappointed him in 1905. He died April 9, 1909.

HITCHCOCK, Frank Harris, public man, born in Amherst, Ohio, Oct. 5, 1867. He studied at Harvard University, where he graduated in 1891, and subsequently took a course at the Columbian University Law School. In 1894 he was admitted to the bar of the District of Columbia, since which time he occupied various positions in government departments at Wash-

FRANK H. HITCHCOCK.

ington. He was first assistant Postmaster-General in the second administration of President Roosevelt, but resigned in 1908 to become chairman of the Republican national committee. In 1909 he was made Postmaster-General by President Taft.

HITCHCOCK, Roswell Dwight, theologian and educator, born in East Machias, Me., Aug. 15, 1817; died June 16, 1887. In 1836 he graduated from Amherst College, was ordained pastor of the Congregational Church of Exeter, and spent a year in the German universities of Halle and Berlin. He became professor of natural and revealed religion in Bowdoin College in 1852, traveled extensively in Eurasia, and in 1871 was elected president of the American Palestine Exploration Society. His writings include "Life of Edward Robertson," "Socialism," and "Hymns and Songs for Worship."

HITTITES (hĭt'tits), the name of a powerful tribe of Syria, which occupied the region between the Orontes and the Euphrates. The first mention of the Hittites in the Scriptures is in connection with Abraham at Hebron, who bought of them the field and cave of Machpelah. From them Esau obtained his first two wives. They occupied a part of Canaan at the time of the Jewish invasion under Joshua. Uriah, one of the chief officers under David, was a Hittite, and they appear to have remained with the Jews even up to the time of Ezra and Nehemiah. They are referred to in the cuneiform inscriptions of Egypt, in which they are called Khita or Kheta. It is probable that they were a far greater people than the biblical mention of them indicates, since their outposts seemed to have extended as far west as the Aegean Sea about 1200 B. C.

HIVES, or **Nettle-Rash,** the common name of eruptions of the skin. They appear as white rounded elevations, but later turn red, causing an intense itching. Hives result from certain drugs, such as balsams and often from eating certain kinds of food, as crabs or lobsters.

HOANG-HO (hwäng'hō), or **Yellow River,** one of the important rivers of China, rises north of Tibet, flows toward the Khingan Mountains, thence south to the Pe-ling Mountains, and thence northeast into the Gulf of Pe-chi-li. Its banks are protected by levees, but it often overflows, the most noted of its inundations occurring in 1887. The entire length is 2,600 miles and the area of its basin is about 390,000 square miles, which constitutes one of the most productive and populous regions of China. The principal tributaries include the Tao-ho, the Wei-ho, and the Ta-tung-ho. It is designated Yellow River on account of the quantities of yellow earth held in solution by its waters and carried as silt into the Yellow Sea.

HOAR (hōr), **Ebenezer Rockwood,** jurist, born at Concord, Mass., Feb. 21, 1816; died Jan. 31, 1895. He studied at Harvard and was admitted to the bar, and in 1849 became judge of the court of common pleas. Six years later he was appointed a justice of the supreme court of the State, which office he held until 1869, when he was made Attorney-General of the United States by President Grant. In 1872 he was elected a member of Congress, in which body he exercised considerable influence in formulating important measures.

HOAR, George Frisbie, jurist and statesman, born in Concord, Mass., Aug. 29, 1826; died Sept. 30, 1904. He was educated at Harvard University, admitted to the bar of Massachusetts in 1849, and in 1869 became a member of Congress as a Republican. He served in the House until 1877, when he became United States Senator, and was reëlected in 1883, 1889, 1895, and 1901. He was prominent in national legislation, serving on many important committees, and became noted as an opponent of the Philippine policy of his party. He was regent of the Smithsonian Institution, trustee of the Peabody Fund, and president of the board of trustees of the American Historical Society.

HOBART (hō'bẽrt), the capital of Tasmania, on the Derwent River, near its entrance into Storm Bay. It is located on the south coast of the island, has a railroad and electric railway facilities, and is the seat of considerable trade. The chief buildings include a college, an art gallery, a public library, a museum, and the Parliament buildings. The streets are regularly platted and well improved. Near the city is Mount Wellington, which is visited by many tourists. It has manufactures of clothing, soap, flour, earthenware, and machinery. Regular steamship communication is maintained with London and the important ports of New Zealand and Australia. The city was founded in 1804. Its prosperity is due largely to an extensive import and export trade. Population, 1906, 33,318; in 1921, 43,615.

HOBART, Garrett Augustus, statesman, born in Long Branch, N. J., June 3, 1844; died Nov. 21, 1899. He graduated from Rutgers College, studied law, and began the practice of his profession at Paterson, N. J. Shortly after he became city counsel. He served with distinction a long term of years in the State Legislature, both in the house and senate, where he ranked as one of the most influential members. In 1896 he was placed on the ticket with William McKinley and elected to the Vice Presidency. He died before his term of office expired. In 1869 he married Jennie Tuttle, daughter of Senator Tuttle.

HOBBEMA (hŏb'bĕ-mȧ), **Meindert,** noted painter, born in Amsterdam in 1638; died Dec. 14, 1709. His genius became recognized only within recent years, consequently his history is largely obscure. About 150 of his works have been catalogued, some of which have sold at high prices. His painting entitled "The Avenue Near Middelharnis, Holland," is one of his finest productions, and is now in the national gallery at London. Other productions are in the museums of Brussels, Berlin, and Saint Petersburg. Many of his subjects are landscapes, but all are characterized by admirable perspective and distinctive characters.

HOBBES (hŏbz), **Thomas,** philosopher, born at Malmesbury, England, April 5, 1588; died Dec. 4, 1679. He was the son of a clergyman, studied logic and physics at Oxford, and in 1608 became tutor to the eldest son of the Earl of Devonshire. Two years later he made a tour of France and Italy and on returning to London formed the acquaintance of Bacon and Ben Jonson. He became instructor to Charles, Prince of Wales, in 1647, and soon after devoted his attention more largely to the study of political, moral, and theological subjects. He is noted as a writer on government and his works are closely associated with the development of free thought in Europe. Among his books are "Treatise on Human Nature," "Philosophical Rudiments," and "Leviathan, or the Matter, Form, and Power of a Commonwealth."

HOBOKEN (hō'bō-kẹn), a city and port of entry in Hudson County, New Jersey, on the Hudson River, immediately above Jersey City and opposite New York City. It is on the Erie, the West Shore, the Delaware, Lackawanna and Western, and other railroads. A number of European steamship lines have their termini here. The city is at the base of the Palisades and the principal streets run north and south, parallel to the river. Among the noteworthy buildings are the Stevens Institute of Technology, the Saint Mary's Hospital, the public library, and a number of fine schools. It has a firemen's monument, situated in Church Square Park, and maintains Hudson Park.

Hoboken is an important coal and produce depot and has a large trade in furniture and bakery products. The manufactures include lead pencils, machinery, leather goods, coffins, paper, silk goods and tobacco products. Extensive electric street railway lines, sewerage, gas and electric lighting, and stone and macadam pavements are among the facilities. The site was a part of the patroonship granted to Michael Pauw in 1630 and was first called Hobocan Hacking. It was settled in 1640, but the city was really founded by John Stevens in 1804. It was incorporated as a town in 1849 and became a city in 1855. The city was visited by a destructive fire in 1900, but the damaged parts were rebuilt on an improved plan shortly after. Population, 1920, 68,166.

HOBSON (hŏb's'n), **John Atkinson,** educator and author, born in Derby, England, July 6, 1858. He studied at Oxford and devoted several years to teaching in the schools of England. In 1887 he was made lecturer in economics and English literature for the University Extension Delegacy and the London Society for the Extension of University Teaching. Besides contributing to magazines and popular reviews, he wrote with much versatility on economic and other public questions. His works include "Problems of Poverty," "Evolution of Modern Capitalism," "John Ruskin, Social Reformer," "Economics of Distribution," "Capitalism and Imperialism in South Africa," and "Social Problems."

HOBSON, Richmond Pearson, naval constructor, born in Greensboro, Ala., Aug. 17, 1870. He studied at the Southern University in his native town for three years, when he entered the Naval Academy at Annapolis, where he graduated in 1889. The next year he aided in construction work at Paris, studied two years in France, and returned to the United States in 1893, receiving an appointment as naval constructor while abroad. He was a participant in the bombardment of Matanzas and the expedition against San Juan de Puerto Rico at the time of the Spanish-American War. On June 3, 1898, he and seven men sank the *Merrimac* in the channel of the harbor at Santiago de Cuba, with the view of blockading the Spanish fleet. Although the end sought was not accomplished, the daring of the exploit made the participants popular heroes. He was taken prisoner and exchanged after a few weeks. In 1903 he resigned from the navy and developed much popularity as a lecturer. He published "Report on Disappearing Guns Afloat," "Information Gathered Abroad by Students," and "The Sinking of the Merrimac."

RICHMOND P. HOBSON.

HOBSON'S CHOICE, a phrase originating from Tobias Hobson, the first keeper of a livery stable in England. The *Spectator,* a periodical published in London, related that Hobson had forty horses in his barn, and that he always kept near the door the one he wished to have used. Travelers coming to the barn were induced to allow him to choose the horse, when he always took the one nearest the door, hence "Hobson's Choice" came to signify an apparent rather than a real choice.

HOCHKIRCH (hōh'kirch), a town in Saxony, Germany, famous on account of a battle fought there in the Seven Years' War, on Oct. 14, 1758. The Prussians under Frederick the Great were defeated by the Austrians under General Daun, but after retreating to the Heights of Drehsa the Austrians were routed completely.

HODGINS, John George, author and librarian, born in Dublin, Ireland, Aug. 12, 1821. He came to Canada in 1833, studied at Victoria

College, Coburg, and in 1870 was admitted to the bar of Ontario. Previous to that he had served as secretary of the board of education in Upper Canada, and was secretary of the International Congress of Education in New Orleans in 1895. For nearly thirty years he was chief editor of the *Journal of Education* in Upper Canada. His books include "Lectures on the School Law," "First Steps in General Geography," "School History of Canada," and "Sketches and Anecdotes of the Queen."

HOE, Richard March, inventor, born in New York City, Sept. 12, 1812; died in Florence, Italy, June 7, 1886. His father invented the printing press known by his name, but the son made numerous improvements and thereby rendered the power press much more valuable. A rotary press known as the Hoe Lightning Press, as completed by him in 1841, took high rank for its value in newspaper work. Subsequently he invented the web perfecting press, which prints both sides of the sheet and cuts and folds the paper.

HOFER (hō′fẽr), **Andreas,** soldier and patriot, born at Saint Leonard, France, Nov. 22, 1767; died Feb. 20, 1810. His father was a landlord of an inn called *Am Sand,* of which the son became proprietor. In 1796 he became the leader of a body of sharpshooters that defended the Tyrol against the French, and in 1809 headed an uprising against the French and Bavarians. Soon after he won the Battle of Innsbruck and was declared ruler of Tyrol, but he was afterward defeated by a superior force and captured, having been betrayed into the hands of the French. Napoleon ordered him shot after a summary trial, but in 1818 his family received an indemnity from Austria for the loss of their property.

HOFMANN (hôf′män), **August Wilhelm,** chemist, born in Geissen, Germany, April 8, 1818; died May 5, 1892. He studied law, but afterward took an extensive course in chemistry under Leibig and in 1845 became a teacher of chemistry at Bonn. Soon after he took charge of the Royal College of Chemistry at London, and in 1864 returned to Bonn as director of the University laboratory. After 1865 he resided at Berlin, where he served as professor of chemistry at the university until his death. His researches aided in laying a foundation for what is called modern chemistry. Through his investigations the colored salts known as fuchsin and dahlin, which are the most important colors derived from aniline, were obtained.

HOFMANN, Josef, concert pianist, born in Cracow, Austria-Hungary, in 1877. He descended from a Polish family and his father was a noted musician of Warsaw. He first studied under his father in the latter city, and subsequently took a course of two years with Rubinstein. As early as 1883 he played successfully, and when ten years of age made a tour of Canada and the United States. On returning to Europe he retired for further study, and made his second début at Dresden in 1894. Subsequently he made a number of tours in Europe and America. He is not only celebrated as a pianist, but is a composer of several attractive productions.

HOG. See **Swine.**

HOGARTH (hō′gärth), **William,** painter and engraver, born in London, England, Nov. 20, 1697; died in Leicester, Oct. 26, 1764. After serving as an apprentice to a silversmith, he studied at Sir James Thornhill's school, and in 1720 began business by engraving coats of arms, designing plates, and preparing illustrations for booksellers. In 1730 he secretly married the daughter of Sir James Thornhill. His works are noted for inventive genius, clearness of design, and originality in detail. The most noted include "The Distressed Poet," "Modern Midnight Conversation," "Rake's Progress," "Strolling Actresses in a Barn," "The Enraged Musician," and "Marriage à la Mode." The last named is considered his best production.

HOGG (hŏg), **James Stephen,** public man, born near Rusk, Tex., March 24, 1851. He attended the common schools and the high school at Rusk, after which he studied and practiced law. In 1873 he was elected county attorney of Wood County, serving until 1875, and later became a district attorney. He was chosen attorney-general of the State in 1886. After filling that position for four years, he was elected Governor, in which office he served until 1895. Subsequently he engaged in the practice of law at Austin. He was prominent as a public speaker and a member of many political conventions.

HOHENLINDEN (hō-ẹn-lĭn′dẹn), a village in Bavaria, Germany, twenty miles east of Munich. It is celebrated for the victory of the French over the Austrians, in which the latter lost 8,000 killed and wounded, while the French lost 5,000 men. Marshal Moreau commanded the French and Archduke John had command of the Austrians. The battle occurred on Dec. 3, 1800, and shortly after the Peace of Lunéville was concluded.

HOHENLOHE-SCHILLINGESFÜRST (hō′ĕn-lō-ẹ-shĭl′lĭngs-fürst), **Chlodwig Karl Viktor,** chancellor of Germany, born at Rotenburg-an-der-Fulda, March 31, 1819; died July 6, 1901. He studied at Heidelberg, Bonn, and Göttingen and held several offices in the law courts at Potsdam and Ehrenbreitstein. During the War of 1866 he was an influential advocate of the cause of Prussia, and in the same year became minister of foreign affairs in Bavaria. In 1871 he was vice president of the first Reichstag of Germany, and three years later became ambassador to France. He was a member of the Congress of Berlin in 1878, became governor of Alsace-Lorraine in 1885, and succeeded Count Caprivi as chancellor in 1894. On resigning in 1900. he was succeeded by Count von Bülow. His policy as a public official was uniformly toward uniting the members of the empire into a closer union, to extend the national spirit, and to enlarge the colonial policy of the empire.

HOHENSTAUFEN (hō′ĕn-stou-fẹn), the name of a family of princes which ruled Germany from 1138 to 1254. The name was derived from a castle on Mount Staufen in Württemberg, built by Frederick of Buren, one of the ancestors of the family. Conrad III., who succeeded Lothair of Saxony, was the first sovereign of the Hohenstaufen dynasty. He was succeeded by his nephew, Frederick Barbarossa, in 1152. The other kings of the line succeeded to the throne as follows: Henry VI., in 1190; Otho IV., in 1208; Frederick II., in 1212; and Conrad IV., in 1250. The last mentioned died in 1254 and the possessions of the house were divided and now belong to Baden, Bavaria, and Württemberg. The rulers of this family were noted for vigor and energy, and the contests between the popes and the Guelphs are included among the prominent features of their reign.

HOHENZOLLERN (hō′ẹn-tsôl-lĕrn), a province of southern Germany, forming an administrative district of Prussia. The area is 480 square miles. It is entirely surrounded by Württemberg. In 1910 it had a population of 71,009. The house of Hohenzollern, a princely family of Germany, derived its name from this region. It descended from Count Thassilo, a Swabian noble of the time of Charles the Great, who founded a castle on the Zollern Heights in the 9th century. This dynasty continued in an unbroken line until 1918, when Emperor William II. of Germany abdicated the throne, though the most distinguished name associated with it is that of Frederick II. the Great.

HOLBEIN (hôl′bīn), **Hans,** eminent painter, born in Augsburg, Germany, about 1497; died in 1543. He was the son of Hans Holbein, called the Elder, who was likewise a celebrated painter. At the age of sixteen years the younger adorned churches and houses in Basel, and in 1526 went with Erasmus to England, where he met Sir Thomas More. After remaining three years at London, he returned to Basel, but again went to London in 1532. Henry VIII. made him royal painter, and, after producing numerous portraits, he was sent to Denmark to paint a portrait of Christina. Later he painted a celebrated likeness of Anna of Cleves. The wealth of color and exquisite expression put by Holbein into portraits place him in the rank of the great masters, but he also did splendid work in wood engraving. Among his most famous productions are the "Madonna," at Darmstadt, "The Dance of Death," "The Solothurn Madonna," "Family of Sir Thomas More," "Archbishop Warham," "The Last Supper," "The Ambassadors," and portraits of Saul, Rehoboam, Samuel, and Hezekiah.

HOLBEIN, Hans, noted painter, father of the preceding, born at Augsburg, Germany, in 1460; died in 1524. He studied in his native city and at Ulm, where he was influenced by the Flemish school of painting, and later studied in Italy. However, his products are generally classed with the Flemish. His chief products include "The Last Supper," "Virgin and Child with Two Angels," "Martyrdom of Saint Sebastian," "The Fountain of Life," and "Expulsion of the Jews from the Temple."

HOLDEN (hōl′dẹn), **Edward Singleton,** astronomer, born in Saint Louis, Mo., Nov. 5, 1846. He studied at Washington University and the United States Military Academy, and subsequently became an instructor of philosophy and mathematics in the latter. In 1873 he resigned from the army and for some time was professor of mathematics in the naval observatory. He was president of the University of California in 1883-88, and in the latter year became director of the Lick Observatory on Mount Hamilton, California. In 1901 he was made librarian of the United States Military Academy. He contributed much of value to the science of astronomy by making original investigation and publishing numerous reports. His books include "Life of Sir William Herschel," "Pacific Coast Earthquakes," "Mountain Observations," "Essays in Astronomy," "Hand-book of the Lick Observatory," and "Index Catalogue of the Nebulae." He died March 16, 1914.

HOLDER (hōl′dẽr), **Charles Frederick,** naturalist, born in Lynn, Mass., Aug. 5, 1851; died Oct. 11, 1915. He studied and graduated at the Friend's school in Providence, R. I., and afterward attended the United States Naval Academy at Annapolis. It was his intention to engage permanently in military work, but he developed a fondness for science and the study of kindred subjects. In 1871 he became assistant curator of zoölogy in the American Museum of Natural History in New York City, where he did efficient work a number of years. Subsequently he removed to California, was president of the board of education at Pasadena, and later became professor of zoölogy at the Throop University. He lectured and wrote extensively on educational topics. Among his publications are "Stories of Animal Life," "Elements of Zoölogy," "Louis Agassiz, His Life," "The Treasure Divers," "Charles Darwin's Life and Work," "Marvels of Animal Life," "Pasadena Highlands," and "Half Hours with Nature."

HOLIDAY (hŏl′ĭ-dā), a day set apart for the commemoration of some important event, as a religious or national festival. Besides the Sunday or Sabbath, the more important are New Year's Day, Washington's Birthday, Good Friday, Decoration Day, Fourth of July, Labor Day, Thanksgiving Day, and Christmas. This list of holidays is observed in nearly all parts of the United States, but in most states others are quite generally observed, particularly Lincoln's Birthday, Lee's Birthday, Arbor Day, and Election Day.

The statutory holidays of Canada are Sundays, New Year's Day, the Epiphany, Good Friday, the Ascension, Ash Wednesday, Conception Day, Easter Monday, All Saints' Day, Christmas Day, the birthday of the ruling sovereign, Victoria Day, Dominion Day, Labor Day (the first Monday in September), and any day appointed by proclamation for thanksgiving or a general fast. This list applies to the Dominion and in addition certain days are observed by some of the provinces, as Arbor Day and any day appointed by the Governor General.

HOLINSHED (hŏl'ĭnz-hĕd), or **Hollingshead, Raphael,** author, born about 1515; died in 1580. The place and date of his birth are unknown; but he is generally believed to have been the son of Ralph Hollingshed of Cophurst, England. He is famous as the author of a history of the British Isles known as "Chronicles of England, Scotland, and Ireland." However, in this work he seems to have been assisted by several writers, including Harrison and Fleming. This work furnished material for some of the historical plays of Shakespeare, such as *Cymbeline, Macbeth,* and *King Lear.*

HOLLAND (hŏl'ląnd), a city of Michigan, in Ottawa County, on the Black River, about three miles from Lake Michigan. It is on the Père Marquette Railroad and regular steamboat lines of the Great Lakes. It has a large trade in grain and lumber. The manufactures include sugar, furniture, ironware, machinery, and utensils. It has many churches, a fine public school system, and good municipal improvements, including electric lights, waterworks, and pavements. It is the seat of Hope College, an important educational institution of the Reformed Church, with an attendance of 300 students and a library of 18,000 volumes. Holland was founded in 1847 and incorporated in 1867. The city has a large number of citizens of Dutch extraction. Population, 1920, 12,166.

HOLLAND. See **Netherlands.**

HOLLAND, Josiah Gilbert, novelist and journalist, born in Belchertown, Mass., July 24, 1819; died in New York City, Oct. 12, 1881. He graduated from the Berkshire Medical College, at Pittsfield, Mass., and, after practicing medicine for three years, became superintendent of public schools at Vicksburg, Mass. In 1849 he engaged as editor on the Springfield *Republican,* which he made a journal of much influence in New England, but sold his interest in 1856 and traveled in Europe. He established the *Scribner's Magazine* in 1870, which was succeeded by the *Century Magazine*, on which he remained an editor until his death. While resident in New York, he was president of the board of education and chairman of trustees of the New York College. His writings are of a high moral tone and attained much popularity. Among his chief works are "History of Western Massachusetts," "Bitter Sweet," "Arthur Bonnicastle," "The Story of Seven Oaks," "Letters to Young People," "Life of Lincoln," "The Mistress of the Manse," "The Bay Path," and "Complete Poetical Works."

HOLLY (hŏl'lȳ), a genus of plants which includes many species of evergreen shrubs and trees, found mostly in temperate climates. The leaves are glossy, the flowers are whitish or white with yellow shading, and the fruit is mostly scarlet. The tree is from ten to forty feet high and of conical shape. Its ability to bear clipping makes it an excellent plant for hedges and fences that are kept dwarfed. The wood is white and hard and is useful for knife handles, musical instruments, and turnery work. The leaves and twigs are used extensively for decorating houses and public buildings, especially at Christmas. From the bark a mucilaginous substance is secured, which serves in preparing birdlime. The holly tree is widely distributed in North America, Europe, and Africa. Several species are cultivated as ornamental plants. The *maté,* or *Paraguay tea,* of South America, is the leaf of a species of holly.

AMERICAN HOLLY.

EUROPEAN HOLLY.

HOLLYHOCK (hŏl'lĭ-hŏk), a plant native to China, but now cultivated for its ornamental flowers in gardens and parks. Though perennial in warm countries, it is classed with the biennials in temperate climates. It has a tall, branchless stem. The flowers are either single or double on the upper part and are greatly variegated in color. As cultivated in gardens, it reaches a height of from five to twelve feet, and is popular on account of its blooming until late in autumn. The leaves are rough and heart-shaped, the sessile flowers are large, and the corolla has five petals. In some countries the flowers are used in medicine. Some of the double flowering species are grown extensively. See illustration on following page.

HOLMAN, William Steele, statesman, born in Dearborn County, Indiana, Sept. 6, 1822; died April 22, 1897. He attended Franklin College, was admitted to the bar, and in 1843 became probate judge. In 1847 he was elected prosecuting attorney, became a member of the Legislature in 1851, and was elected to Congress as a

DWARF DOUBLE HOLLYHOCK.

Democrat in 1859. He served in Congress until his death, except in the Forty-fifth and Forty-sixth, and from his opposition to wasteful public expenditures became known as "The Great Objector" and "The Bulldog of the Treasury."

OLIVER WENDELL HOLMES.

HOLMES (hōmz), **Oliver Wendell**, poet and essayist, born in Cambridge, Mass., Aug. 29, 1809; died in Boston, Oct. 7, 1894. His father, Abiel Holmes, was a Congregational minister, and his mother, Sarah Wendell, descended from Dutch parentage. His preliminary education was obtained at Phillips Academy, Andover, Mass. In 1829 he graduated from Harvard University and later studied medicine there and at Paris, and in 1836 received a degree in medicine. He became professor of anatomy and physiology at Dartmouth College in 1838, which position he held two years. In 1840 he married Amelia Lee Jackson of Boston. About this time he made his only important contribution to medical science, which he wrote under the title "Contagiousness of Puerperal Fever." In 1847 he secured a chair in the Harvard Medical School, Boston, a position he held for 35 years.

Holmes has a literary career that dates from his student days, when he developed skill in writing verse and short sketches. His writings have a characteristic vein of the beautiful and true in nature, and are always popular on account of the wit and wisdom displayed. As an instructor he took high rank, both his physiological and psychological instruction being of the highest character. In 1886 he visited Europe, where he was received with marked distinction by scholars and the public. Cambridge, Edinburgh, and Oxford granted him degrees. His writings include "The Last Leaf," "The Chambered Nautilus," "The Autocrat of the Breakfast Table," "The Poet at the Breakfast Table," "The Professor at the Breakfast Table," "Life of Ralph Waldo Emerson," "Old Ironsides," "Elsie Venner," "The Wonderful One-Hoss Shay," "Every Man His Own Boswell," "Life of John Lathrop Motley," "One Hundred Days in Europe," and "Over the Teacups."

HOLMES, Oliver Wendell, jurist, born in Boston, Mass., March 8, 1841. His father, Oliver Wendell Holmes, the noted poet and essayist, provided liberally for his education. He studied at Harvard University and Harvard Law School, and served for two years in the Civil War. He was wounded in the breast at Ball's Bluff, in the neck at Antietam, and in a foot at Fredericksburg. After the war he practiced law at Boston, where he edited the *American War Review*, and in 1882 became professor in the Harvard Law School. He was made associate justice in the same year, serving until 1899, when he became chief justice of the supreme court of the State. President Roosevelt appointed him associate justice of the United States Supreme Court in 1902. He edited Kent's "Commentaries" and published "The Common Law."

HERMANN E. VON HOLST.

HOLST (hōlst), **Hermann Eduard von**, historian and educator, born in Livonia, Russia, June 19, 1841; died Jan. 20, 1904. He graduated at Dorpat and Heidelberg, and was made a tutor at Saint Petersburg. Later he traveled in Germany, where he prepared a pamphlet for which he was excluded from Russia, when he came to the United States and engaged in literary work at New York. In 1872 he was appointed professor at the University of Strassburg, Germany, and two years later secured a like position as teacher of history at Freiburg. Later he lectured on history at Johns Hopkins University, but again taught at Freiburg. In 1892 he was elected to the chair of history at the Chicago University, which he filled with marked success. He assisted in editing Schem's "German-American Conversations-Lexicon." His writings include "Constitutional and Political History of the United States," "Constitution and Democracy of America," "Life of John C. Calhoun," and "Constitutional Law of the United States."

HOLSTON (hōl'stŭn), a river of Tennessee, rises on the eastern slope of the Clinch Mountains, and at Kingston joins the Clinch River to form the Tennessee. Its length is about 200 miles, most of which is navigable for light-draft river boats.

HOLT (hōlt), **Joseph,** jurist, born in Breckenridge County, Ky., Jan. 6, 1807; died Aug. 1, 1894. He studied at Center College, Danville, and was admitted to the bar in 1828. Subsequently he removed to Mississippi, where he became noted as a public man, and in 1857 was made commissioner of patents. Two years later he became Postmaster-General, assumed charge of the War Department in 1860, and soon after became judge-advocate general in the army. He presided at the trial of Lincoln's assassins. In 1865 he was promoted to the rank of a major general and ten years later retired at his own request.

HOLY ALLIANCE, a league formed by Alexander I. of Russia, Frederick William III. of Prussia, and Francis of Austria on Sept. 26, 1815. It was concluded at Paris and signed by the sovereigns in their own hand. The purport of the league was to make the precepts of Jesus Christ the basis of administration, but the real purpose consisted of maintaining the power of the existing dynasties. The Holy Alliance came to an end by the events of 1848.

HOLY FAMILY, in art, the name applied to representations of the Virgin, the infant Savior, and their attendants. Many paintings known by this title are extant, the first of which date from the 6th century. Among these is the famous production in which the Virgin is represented sitting on a seat, now in the Catacomb of Saint Calixtus in Rome, and later painters substituted a throne for the seat. Subsequently the Prophet Isaiah and angels were introduced as prominent attendants. Other figures frequently seen in these paintings include the mother of the Virgin, the infant John the Baptist, Saint Catherine, Saint Anna, and Saint Joseph. The Madonna and Child later became prominent subjects of paintings, although they were comparatively unknown in art before the 13th century. Among the leading painters who produced works in which the Holy Family is a prominent figure include Raphael, Leonardo, Perugino, Giovanni Bellini, and Andrea del Sarto.

HOLY GHOST, or **Holy Spirit.** See **God.**

HOLYOAKE (hōl'yōk), **George Jacob,** reformer, born in Birmingham, England, April 13, 1817; died in 1906. His father worked in an iron factory at Birmingham, under whose guidance he began to work in the foundry at the age of twelve years. For some time he attended the Mechanics' Institution, where he afterward taught mathematics and developed a fondness for lecturing and journalism. In 1837 he met Robert Owen and became so impressed with his social theories that he began to write and lecture concerning them and in support of coöperation. He was imprisoned for blasphemy in 1842, owing to his radical advocacy of a moral system he called secularism. The London Secular Society made him its president, in which position he was succeeded by Mr. Bradlaugh in 1858, and subsequently he gave attention largely to journalism and political reforms. He looked upon Paine's "Rights of Man" as a reasonable treatise of the political questions, and regarded competition and industry with distrust. His chief writings include "History of Coöperation in England," "History of Rochdale Pioneers," "Life of Joseph Rayner Stephens, Preacher and Political Orator," "Self-Helps One Hundred Years Ago," and "Sixty Years of an Agitator's Life."

HOLYOKE (hōl'yōk), a city of Massachusetts, in Hampden County, on the Connecticut River, eighty miles west of Boston. It is on the Boston and Maine and the New York, New Haven and Hartford railroads. Extensive water power is obtained from the river, which has a fall of sixty feet at this place. The municipal facilities include electric lights, waterworks, a public library, and an extensive street railway system, by which it is connected with Springfield and other cities. The public schools rank among the best in the State, and the public buildings include many valuable and massive structures. They include the Federal building, the city hall, the public library, and many schools and churches. Among the manufactures are machinery, cutlery, cotton and woolen goods, screws, rubber, sealskin, blank books, and wire. Holyoke was long called Ireland Parish as it was originally settled by the Irish. From 1786 until 1850 it was a part of West Springfield. It was chartered as a city in 1873. Population, 1905, 49,124; in 1925, 60,335.

HOLYOKE, Mount, a ridge situated in Hampshire County, Massachusetts. It is about seven miles long. The highest point is 1,122 feet above sea level. It separates Hadley and Amherst townships from Granby and South Hadley. Mount Holyoke College is situated in Hadley township, on the northern side of the ridge, and is the oldest college for women in the United States. It was established in 1837, has 120 instructors, 1,025 students, and contains a library of 95,469 volumes. The college property has a value of $2,589,255.

HOLY ROMAN EMPIRE, a vast dominion established in the western part of Europe. It dates from the year 800, when Charlemagne was crowned at Rome as successor of the Roman emperors, but the name *Roman Empire* was not used until 962, when Otho the Great was crowned by Pope John XII. and inaugurated the Roman Empire of the German nation. The empire included all of the territory in which the people recognized the German monarch and Italy, and at different times it included Denmark, Hungary, Poland, Cyprus, and Jerusalem. Frederick Barbarossa, in 1152, prefixed the word *Holy,* after which the dominion became known as the Holy Roman Empire. The Hohenstaufen (q. v.) dynasty represented the stronger monarchs of this imperial realm, and after their time the title was rather honorary than imperial. Switzerland became independent from the empire in the 15th century, the Netherlands obtained their independence by the Peace of Westphalia in 1648, and other territory was gradually lost or became semi-dependent. All but two of the emperors after 1438 belonged to the house of Hapsburg. In 1806 the title Holy Roman Emperor became extinct, as Francis II., two years previous to that, had been crowned as Emperor of Austria.

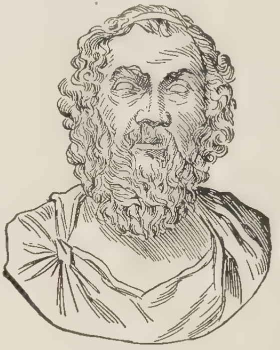
HOLY SEPULCHER (sĕp′ŭl-kẽr), the tomb in which Jesus lay. It was located near the place of crucifixion, having been hewn out of a rock near the walls of Jerusalem. The place called *Golgotha,* meaning a skull, which has been anglicized as *Calvary,* is the place of the crucifixion. Not far from it, near a road and within a garden, was the tomb, which is said to have belonged to a rich man by the name of Joseph. Within the modern city of Jerusalem, about 450 yards west of the northern part of the Haram esh-Sherif, or temple area, is the Church of the Holy Sepulcher, which covers the traditional site of both Golgotha and the tomb of Jesus. See **Jerusalem.**

HOLY WATER, a consecrated mixture of salt and water used in the ritual of the Roman Catholic Church. The use in churches is very ancient and many believe it to have been derived from a similar custom practiced by the ancient Hebrews. The water, after being blessed by a priest, is sprinkled on the worshipers and some of the objects in the church, such as the images, vestments, and bells. It is used at various domestic occasions, especially at marriages and funerals.

HOLY WEEK, the last seven days of Lent, the week before Easter, and frequently spoken of as Passion Week. It is kept as a penitential season to commemorate the passion and death of Christ. The special days included are Palm Sunday, Spy Wednesday, Holy Thursday, Good Friday, and Holy Saturday. The Roman Catholic church commands abstinence from wine and flesh for all the days, but absolute fast is enjoined for the Friday and Saturday.

HOMEOPATHY (hō-mē-ŏp′á-thy̆), or **Homoeopathy,** the name of a system of medical practice introduced by Samuel Hahnemann. The distinguishing characteristic of the system is based upon the principle that "like cures like." He set forth the essence of the system in the following words: "Every powerful medicinal substance produces in the human body a peculiar kind of disease; the more powerful the medicine, the more peculiar, marked, and violent the disease. * * * We should imitate nature, which sometimes cures a chronic disease by superadding another, and employ, in the disease we wish to cure, that medicine which is able to produce another very similar artificial disease, and the former will be cured." See **Allopathy.**

HOMER (hō′mẽr), the earliest and most celebrated of Greek poets, and to whom the authorship of the "Iliad" and "Odyssey" is assigned. Several histories have been published under the title, "The Life of Homer," whose authorship is attributed to Herodotus and Plutarch, but it is quite certain that they are not genuine and possess value only because from them we learn the traditions commonly held in early times regarding the poet. His birthplace is claimed by many localities, among them Smyrna and Chios, but whether he was born there or at some other place claiming the honor is uncertain. It is generally agreed that Homer was a Greek of Asiatic birth, and that he belonged to the 9th century, being born probably about 850 B. C., or about 400 years after the Trojan War. Scholars have generally agreed that Homer was blind and that he did not write the productions attributed to him, but instead went from place to place and recited them before the people from memory. In this way they appear to have been handed down through successive generations until they were written and given to the world in substantially the present form.



HOMER.

The two famous poems of Homer are properly entitled "The Poem of Ilium" and "The Poem of Odysseus." Each is divided into 24 books and both belong to the cycle of myth. References made to several local incidents and the dialect in which they appeared make it certain that both originated on the Aegean islands and the Ionian coast of Asia. They were introduced at Sparta by Lycurgus in 776 B. C. At Athens the manner of their recitation was regulated by the laws of Solon. The frequency with which the "Iliad" and "Odyssey" are quoted by Grecian writers shows the high esteem in which they were held, and, while not strictly historical, they possess much value in their characteristic exhibit of the life, customs, and opinions of the people.

The "Iliad" contains an account of an episode which covered about forty days of the siege laid by the Greeks for ten years to the city of Troy. This entire work consists of 15,681 lines, and is subdivided into 24 books, of which fifteen treat specially of the engagements in the Trojan War. It begins properly with the *Wrath of Achilles,* but certain events preceding this incident must be known in order to understand the story. These include the rape of Helen, the wife of Menelaus, king of Sparta, by the Trojan Paris. Agamemnon, king of Mycenae, to avenge the wrong and recover Helen, set sail with a large fleet to besiege Troy. The siege lasted for ten years and the Trojans, fearing Achilles, refused to venture into a direct combat. At last Achilles, from whom the captive maiden, Briseis, had been taken by Agamemnon, became offended and withdrew to his tent on the seashore. Here the "Iliad" begins. It recounts that Achilles was at length appeased, gives a description of the final engagement, and ends with the death of Hector and the fall of Troy.

In the "Odyssey" are 12,205 lines. This highly interesting work describes the return of Odysseus, or Ulysses, a hero of the Greeks, from the war against Troy. It recites the beginning of his voyage, his adventures with Polyphemus, a one-eyed monster, his numerous shipwrecks, and his final return to Ithaca. A famous edition of the "Iliad" and "Odyssey" was prepared for Alexander the Great by Aristotle. Both these productions have been translated into all the leading languages. The translations of Homeric poems made by Bryant and Pope are among the best in English.

HOMER, Winslow, artist, born in Boston, Mass., Feb. 24, 1836. He began work for a lithographer in Boston in 1854 and removed to New York in 1859, where he was designer in a publishing house and attended the National Academy of Designs. He was special artist for *Harper's Weekly* during the Civil War, and in 1865 went to Paris to study art. His "Prisoners from the Front" is a fine work of art, and his genre paintings from American life are popular, among them "The Cotton Pickers," "Home, Sweet Home," and "A Visit from the Old Mistress." A number of his pictures were exhibited at the Paris Exhibition in 1900 and at Saint Louis in 1904, many of which were admired for their originality and excellent coloring. Among those not named are the following: "Launching the Boat," "Peril of the Sea," "A North Easter," "Eating Watermelon," "Flowers for the Teacher," "In the Field," and "The Tempest." He died Sept. 29, 1910.

HOME RULE, a term applied in British politics to the movement made by the Irish home rule party with the view of establishing a Parliament in Ireland for the purpose of legislating in relation to local affairs, but subject to the imperial Parliament of the empire. It designed to make the local government similar to that now common to Canada and Australia. The movement originated at Dublin in 1870, and four years later 60 members of Parliament were elected who favored the home rule policy. In 1885 there were 86 members under the leadership of Parnell. The project received a new impetus by the support of Gladstone. A large party of Irishmen favor absolute independence, but the adoption of local self-government is held by many to be both feasible and of mutual interest to all concerned. In 1914 a home rule bill was passed, but the inauguration of the law was postponed on account of the Great European War. John Redmond and Justin McCarthy are among the recent advocates of home rule.

HOMESTEAD (hōm'stĕd), a borough of Pennsylvania, on the Monongahela River, eight miles above Pittsburg. It is on the Pennsylvania and the Pittsburg and Lake Erie railroads. It is the seat of the steel works established by Andrew Carnegie, in which extensive labor disturbances occurred in 1892. The place has good municipal facilities, electric street railways, and a number of fine schools and churches. It is noted especially for its extensive production of steel plate. Population, 1900, 12,554; in 1920, 20,452.

HOMESTEAD ACT, a law enacted in 1862 by the Congress of the United States, under which it became possible for the head of a family, or any person at least 21 years of age, to acquire by settlement and improvement title to 160 acres of public land. The only condition provided is the payment of a registration fee, improvement as a residence, and occupation for five years. This law carries with it the commutation privilege, by which title can be acquired to not more than 160 acres after fourteen months' occupation and the payment of $1.25 per acre, but $2.50 if situated within United States railroad grants. So-called homestead exemptions are recognized in all the states. These provide that a specified amount is exempt from execution for debt to the head of a family, but the amount in different states varies greatly.

In Canada a homestead entry may be made on 160 acres by any male over eighteen years of age, but it must be applied for personally at the district land office. The entry fee is $10. Residence upon the land is required at least six months in each of three years. The homesteader must cultivate a portion of the land each year and not less than fifteen acres must be under cultivation at the end of that time. A patent is issued at the end of three years upon proof of residence and improvement as required by law.

HOMICIDE (hŏm'ĭ-sīd), the act of killing a human being. It may be either criminal or justifiable, depending upon the circumstances under which the act is committed. Justifiable homicide includes the taking of a human life in self-defense, by accident, or under an order issued by a court to an officer. It is especially declared in the law of most countries that whoever kills a human being with malice aforethought, either expressed or implied, is guilty of murder. This constitutes criminal homicide, which is usually divided into three classes, those of murder in the first degree, murder in the second degree, and manslaughter.

HONDURAS (hŏn-dōō'räs), a republic of Central America, bounded on the north and east by the Gulf of Honduras and the Caribbean Sea, south by Nicaragua and San Salvador, and east by Guatemala. It has an area of 43,300 square miles. The climate is similar to that of Guatemala, being hot in the low regions and quite equable and pleasant where the country is elevated considerably. Among the minerals are coal, gold, silver, cobalt, iron, zinc, and lead, but iron is the most important. Much of the soil is fertile. In the southwestern portion trend lofty mountain ranges, but the northern and eastern parts consist of valuable coast and valley lands. The streams flow almost exclusively into the Gulf of Honduras and the Caribbean Sea, and include the Guangues, Cutchabutan, Roman, Tinto, Barba, Catago, and Cape rivers.

Agriculture is the principal industry. The various products include sugar, coffee, tobacco, wheat, indigo, maize, rice, and a large variety of tropical fruits. The forests yield valuable dyewoods, tamarinds, cabinet woods, rubber, and vegetable ivory. Cattle raising and dairying are important industries. The country has considerable trade with the United States, Germany, and Great Britain, in the order named. Several short lines of railway have been constructed, by which the Gulf of Honduras is connected with Puerto Cortez and other interior points, and several lines penetrate the coast and valley regions. In 1917 the railroads included a total of 182 miles. A large part of the interior is reached only by mules and ox-carts. Tegucigalpa is the capital. Other important cities are Juticalpa, Nacaome, La Esperanza, Santa Rosa, and Choluteca.

At present the country comprises seventeen departments. A national constitution proclaimed in 1894 vests the chief executive authority in a president, who is elected by popular vote for a term of four years. The president is assisted by ministers of the interior, finance, war, public instruction and justice, and public works. Legislative authority is vested in a national congress, which is constituted of deputies elected by popular suffrage. It has a standing army of 500 men and a national militia of about 20,000. The inhabitants are largely of Spanish descent and the dominant faith is Roman Catholic, but religious liberty is extended to all. Education is gratuitous and nominally compulsory. Spanish is the spoken and official language. Besides the system of common schools, there are twelve colleges or institutes.

Columbus discovered the coast of Honduras in 1502. Settlements were made by the Spaniards in 1524, when the town of Triumfo de la Cruz was founded. The region was made a royal province of Spain two years later and afterward it became a captain generalcy of Guatemala. It revolted from Spain in 1821 and was annexed to Mexico. In 1823 it joined the states of Central America, but since 1838 it has been an independent republic. Several revolutions and the declaration of war against Germany, in 1918, are recent events. Population, 1928, 860,136.

HONDURAS, Bay of, an important inlet of Central America, extending from the Caribbean Sea. It is bounded largely by Honduras, Guatemala, British Honduras, and Yucatan. The bay contains several important islands, including Turneffe and the Bay Islands, and on its shore are several growing seaport cities.

HONE, or **Whetstone,** a kind of stone used to sharpen edged tools, such as knives, scythes, and razors. Hones are of finer grain than either ordinary whetstones or grindstones. The finest kinds are very hard and compact and are commonly called oilstones. They are made of several species of slate and are used in sharpening the finer class of instruments. The best hones for scythes obtained in America are made of sandstone found in Arkansas. The finer classes of slate or oilstones come from Bohemia and Siberia.

HONEY (hŭn'ȳ), a vegetable food product deposited by bees in the cells of their honeycomb. It is a sweet, thick liquid, quite clear and transparent, and when kept for some time solidifies into a granular white mass. The neuter bees collect the sweet juices of flowers by means of their proboscides, thence it is transferred to the honey-bag, and by certain chemical changes honey is produced, which is deposited in store for food during winter. The sweet found in flowers, called *nectar,* is not honey, but is similar to sweetened water. The completed product is whitish or of a slightly yellowish hue. The flavor of honey is dependent largely upon the plants from which it is collected. In many countries the culture of bees is an important industry, the milder climates being best adapted to the enterprise. Besides being a valuable food, it is used in medicine as a promoter of expectoration, with vinegar as a gargle, in pastry and cooking, and for the manufacture of mead. Both extracted and comb honey are sold in the market. Because of its high percentage of carbohydrates, it is quite nutritious. Where apiaries are kept, it is customary to prepare bee food by cultivating clover and other plants. Clover is a favorite food plant because honey made from its flowers is almost white and of excellent flavor.

HONEY LOCUST, a leguminous forest tree widely distributed in North America, but found most extensively in the southern part of the Mississippi valley and the Atlantic coast plain. The flowers are greenish, usually in spikes, and generally unisexual. They are followed by pods, which are more or less twisted and from a few inches to two feet long. Within the pods are the seeds, enveloped in a pulp, and they become quite sweet when ripe. The leaves are pinnate and the foliage is elegant in appearance. Long thorns develop on the limbs, which make the plant a favorite for ornamental hedges and for fencing. The wood is of an inferior quality and decays rapidly. Several species of locusts grow to a height of 80 to 100 feet, having fine spreading branches.

HONEYSUCKLE, a genus of shrubs and twining plants found in the Northern Hemisphere. About 100 species have been described, of which the common honeysuckle is the best known. It is found largely in Europe and North America, where it blooms from June to September. The flowers are tubular in form and red without and yellow within. The fruit consists of scarlet berries. This species is cultivated extensively for its flowers. In North America there are nine different species of honeysuckle. The Australian honeysuckle is so called because of the sweet liquid found in the flowers. The trumpet honeysuckle is cultivated largely in the United States as a twining plant in gardens and at porches.

HONG-KONG (hŏng′kŏng′), or **Hiang-Kiang,** meaning sweet water, an island near the mouth of the Canton River, off the southeastern coast of China, forming a possession of Great Britain. It is separated from the mainland by a narrow channel called Ly-e-Mun. The area is 32 square miles. Much of the surface is rocky and barren and the shores are steep. The general elevation above the sea is from 1,000 to 2,000 feet. Population, 1922, 668,638.

Hong-Kong, in a larger sense, is a crown colony of Great Britain. It consists of the island of Hong-Kong and the leased district of Kowloon. The latter is in the southeastern part of China and was leased to Great Britain in 1898 for 99 years. This portion of the colony has an area of 376 square miles and a population of 89,012. Victoria is the capital. It extends several miles along the bay. Its harbor is one of the finest in the world, being strongly fortified, and it is the center of a vast trade. The local products consist of various manufactures, such as clothing, cigars, textiles, utensils, and machinery. Among its buildings are a government house, the courthouse, a cathedral, the university, and a number of other public buildings. The island was ceded by China to the British in 1842 after the close of the opium war. Since then it has developed an enormous trade, the value of its annual imports amounting to about $80,000,000 and the exports to $82,000,000. The trade is chiefly with Great Britain, Japan, the United States, Germany, and France.

HONOLULU (hō-nō-lōō′lōō), the largest city and the capital of the Hawaiian Islands, on the southern coast of the Island of Oahu. The site is beautiful and is surrounded by groves of fruit and ornamental trees. It has a pleasant and healthful climate. Among the noteworthy buildings are the capitol, the post office, the customhouse, the public library, the museum, the University of Hawaii, the Oahu College, the Queen Emma Home, and many fine schools, hospitals, and churches. The harbor is well protected, giving the city considerable advantage in foreign trade. It has manufactures of clothing, sugar, cigars, canned fruits and fish, and utensils. The general facilities include sewerage, electric lights, waterworks, pavements, public parks, rapid transit, and railroad connections. It has had a rapid growth in wealth and population. In 1815 it was little more than a fishing village. It became the capital of the archipelago in 1820. Population, 1925, 104,300.

HONORIUS (hō-nō′rĭ-ŭs), **Flavius,** Emperor of Rome, born at Constantinople, Sept. 9, 384; died Aug. 26, 423. He was a son of Theodosius the Great, who divided the empire between his two sons. Honorius received the western part, which included Italy, Africa, Gaul, Spain, Brittany, and Illyria, and his brother Arcadius received the eastern part. He began to reign in the 11th year of his age under the regency of Stilicho, who was a vigorous and successful ruler, but was killed at Ravenna in 408. The emperor was weak and indolent and in 420 became associated with Constantius as emperor, the latter having succeeded Stilicho. The events of his reign includes the loss of Brittainy, the Gothic and German invasion of Gaul, the siege and capture of Rome by Alaric, and the loss of Africa to Heraclian.

HOOD, John Bell, soldier, born in Owingsville, Ky., June 1, 1831; died in New Orleans, Aug. 30, 1879. In 1853 he graduated at West Point, served against the Indians, and entered the Confederate army at the beginning of the Civil War as lieutenant, rising shortly after to the rank of lieutenant general. He commanded at Gaines's Mill, Gettysburg, and Chickamauga, losing a leg at the last-mentioned place. In 1864 he succeeded J. E. Johnston, and on Sept. 1 of that year was compelled to evacuate Atlanta. Sherman defeated him at Franklin and Thomas routed him at Nashville, after which he was relieved of his command at his own request. He wrote "Advance and Retreat."

HOOD, Mount, an elevated mountain of Oregon, in the Cascade Range. It is located in the western part of Wasco County, about fifty miles southeast of Portland. It has an altitude of 11,935 feet. The summit affords a fine and extensive view of the surrounding country.

HOOD, Robin, the name of a bandit, who, with a band of followers, inhabited Sherwood

Forest, Nottinghamshire, England. He is mentioned by many of the English poets. These bandits supported themselves by levying toll upon the wealthy settlers and by hunting in the forests. According to common account Hood lived between 1160 and 1247. The earliest poem based upon his adventures is the "Vision of Piers Ploughman," which was published about 1355. Among the associates of Hood were Little John, George-a-Greene, Friar Tuck, William Scadlock, and Maid Marian.

HOOD, Thomas, poet and humorist, born in London, England, May 23, 1799; died at Devonshire Lodge, May 3, 1845. He was first employed in a Russian merchant's countinghouse, but owing to failing health returned to London. His early training was conducted partly by two maiden ladies, but his general education was largely self-acquired. In 1821 he became assistant editor of the *London Magazine,* which furnished him ample means of development by associating with men of superior attainments, among them Lamb, Hazlitt, and De Quincey. While in a fair way to attain both financial and literary success, a business house failed that involved him in bankruptcy, and he resolved to acquire sufficient to pay off the debt by economical living in Germany. In 1835 he settled at Coblenz, but returned to London in 1840, when he became editor of the *New Monthly.* Hood possessed a delicate fancy, full of graceful play, and had marked ability in punning and putting things in a caustic and entertaining way. His productions include "Death-bed Love's Eclipse," "Plea of the Mid-summer Fairies," "Hero and Leander," "Bridge of Sighs," "Eugene Aram's Dream," "Song of the Shirt," "Up the Rhine," "Lay of the Laborer," and "Ode to Melancholy."

HOODED SEAL. See **Seal.**

HOOKER (hŏŏk'ẽr), **Joseph,** general, born in Hadley, Mass., Nov. 13, 1814; died Oct. 31, 1879. He graduated at West Point in 1837, where he was a classmate of Jubal Early and Braxton Bragg. He served with distinction in the Mexican War and was brevetted lieutenant colonel. In 1853 he left the army, but at the beginning of the Civil War was appointed brigadier general, and in 1862 became commander of a division in the army of the Potomac. His services at Yorktown, Williamsburg, and Malvern Hill caused him to be brevetted major general. Afterward he held important commands in the battles of South Mountain, Antietam, and Fredericksburg. In 1863 he succeeded Burnside in command of the army of the Potomac, but, after his defeat at Chancellorsville, he was succeeded by General Meade. In 1865 he was brevetted a major general and retired in March, 1868, with the full rank of major general. He was brave, skillful, and patriotic in his military career. Popularly he was called Fighting Joe.

HOOKER, Joseph Dalton, botanist and traveler, born at Glasgow, Scotland, June 30, 1817; died Dec. 11, 1911. He studied at Glasgow, where he graduated in 1839, and in 1839 joined the Antarctic expedition under Sir James Ross. In 1843 he returned with several thousand species of plants that were discovered during the journey and previous to that time, and soon after explored the Himalaya Mountains. He ascended the Great Atlas of Morocco in 1871, which had never before been reached by a European, and the following year became president of the Royal Society. He was knighted in 1877. His publications on botany are very numerous. They include "Botany of the Antarctic Expedition," "The Flora of British India," "The Flora of New Zealand," "Himalayan Journals," and "Morocco and the Great Atlas."

HOOKER, Mount, a lofty peak of Canada, one of the highest summits of the Rocky Mountains. It is situated on the border between Alberta and British Columbia and has an altitude of about 15,710 feet.

HOOKER, Richard, clergyman and author, born at Exeter, England, in 1553; died Nov. 2, 1600. He studied at Oxford, where he was granted holy orders in 1581, and subsequently held rectorships in London and Boscombe. His reputation is based, not upon his preaching, but upon his work known as the "Laws of Ecclesiastical Polity." It is a monument of literary style as well as an able defense of the Church of England, as against the Independents and the Presbyterians. In this work he laid the foundation upon which all succeeding writers of the Established Church have built.

HOOKER, Thomas, clergyman, born at Markfield, England, July 7, 1586; died July 7, 1647. In 1633 he went to New England, where he promoted the Connecticut colony, with headquarters at Hartford. His efforts resulted in organizing the United Colonies of New England, which was the first federated government to be organized in America. He published "An Exposition of the Principles of Religion," "The Soul's Ingrafting into Christ," and "The Saint's Guide."

HOOPSTON, a city of Vermilion County, Illinois, 100 miles south of Chicago, on the Chicago and Eastern Illinois and other railroads. It maintains two public parks and has modern buildings, such as the public library, high school, and city hall. The features include gas and electric plants, paving, machine shops, iron works, and a brisk trade. It was settled in 1870 and incorporated in 1872. Population, 1910, 4,698; in 1920, 5,451.

HOOPOE (hōōp'ō), a genus of birds native to the warmer parts of the Old World. These birds are classed according to some with the honey eaters and by others with the horn-billed birds. The bill is long and slightly curved, the tail is broad, and the eyes are large. Two nearly parallel rows of long feathers form a crest on the head. In most species the color is buff, but variegated with black and white. The male is about twelve inches long, somewhat larger than the female, and is more vivid in color. The nest is built in the holes of trees, in which five or six eggs of lavender-gray are laid. They feed largely on insects, worms, and filthy accumulations. The double whoop uttered has originated its name.

HOORNE, or **Horn, Philippe,** statesman and soldier, born at Nevele, in the Netherlands, in 1522; died June 5, 1568.

HOOSAC TUNNEL (hōō'sạk), an important railroad tunnel on the line from Boston to Troy, in the western part of Massachusetts. It is built through the Hoosac Mountain, a range extending into Massachusetts from the Green Mountains of Vermont. It was completed in 1875 at a cost of about $18,000,000, is nearly five miles long, and has a double railway track.

HOOSICK FALLS (hōō'sĭk), a village of Rensselaer County, New York, on the Hoosick River, 27 miles northeast of Troy. It was settled in 1688 and was first incorporated in 1827. Population, 1905, 5,251; in 1920, 4,896.

HOOSICK RIVER, a stream in eastern New York, flows toward the west, and joins the Hudson about fourteen miles above Troy. It is noted for its vast water power.

HOOVER, Herbert Clark, thirtieth President of the United States, born at West Branch, Iowa, August 10, 1874. His father, Jesse Clark Hoover, and his mother, Hulda Randall Minthorn, were Quakers and cultivated a farm. He was left an orphan at ten years of age, and was sent to Oregon to live on a farm with an uncle. Becoming dissatisfied with the routine of farming, he went to Portland, Oregon, when fourteen years of age to work in a real estate office.

Having much ambition, but lacking available means, he made good use of his talents and was successful as a student. In 1891 he was able to go to California, where he enrolled at Stanford University, supporting himself by operating a laundry. His special studies were geology and engineering, in both of which he excelled. He graduated in engineering in 1895, being a member of the first class to complete the course in that institution.

At first he labored as a common workman in order to become familiar with every part of the mining industry. He went to Australia in 1897, where he attained success as a mining engineer for an English syndicate. Subsequently he was an engineer in many engineering operations in various parts of the world, including extensive exploring operations in the interior of China. He took an active part in the defense of Tientsin during the Boxer rising, in 1900, and for the next fourteen years operated as manager, director, and partner in various mining companies. During this time he made and lost two fortunes.

At the beginning of the World War, in 1914, he resided in England, where he became chairman of the American Relief Commission.

President Harding appointed him Secretary of Commerce in 1921 with the understanding that he would continue his relief work. During the administration of President Coolidge he continued to serve as Secretary of Commerce, in which capacity he greatly enlarged American commerce throughout the world. In 1927 he did excellent work for the relief of the Mississippi flood refugees.

The Republican national convention at Kansas City, in 1928, nominated him for President, and Charles Curtis of Kansas was nominated for Vice-President. The Democrat opponents were Alfred E. Smith of New York and Joseph T. Robinson of Arkansas. The election turned in favor of Hoover, giving him 21,482,588 of the popular votes and 444 of the electoral votes, while 15,011,115 of the popular votes and 87 electoral votes were cast for his opponent.

Mr. Hoover married Lou Henry, the daughter of an Iowa banker, who was a student at Stanford University. They have two sons, Herbert Hoover Jr. and Allan H. Hoover. Honorary degrees have been conferred upon him by many leading universities of Europe and America, including Yale, Harvard, Columbia, Princeton and Johns Hopkins. In 1928 he made a friendly visit to Central and South America. His inauguration as President in March, 1929, was followed by a successful administration.

HOP, a perennial plant of the nettle family. A single species is found native in North America and Europe, but under cultivation it has been greatly variegated. The perennial root annually sends forth long, weak, rough, twining stems. The flowers are male and female. The latter, occurring in cones, are greenish in color and constitute the hops sold in the market. These cones are gathered when ripe, and, after being carefully dried, are used to communicate an aromatic bitter flavor to beer.

HOP-VINE AND FLOWER.

HOPKINS (hŏp'kins), **Albert J.,** public man, born in DeKalb County, Illinois, Aug. 15, 1846; died Aug. 23, 1922. He studied law, began a successful practice at Aurora, Ill., and in 1872 became state's attorney for Kane County. In 1884 he was elected to Congress as a Republican, serving until 1903, when he became U. S. Senator.

HOPKINS, Johns, philanthropist, born in Anne Arundel County, Maryland, May 19, 1795; died in Baltimore, Dec. 24, 1873. He descended from Quaker parents, engaged in successful mercantile business enterprises, and devoted a

HERBERT CLARK HOOVER

In a telegram to the Republican Convention that had nominated him for the Presidency, Mr. Hoover wrote as follows:

"My country owes me nothing. It gave me, as it gives every boy and girl, a chance. It gave me schooling, independence of action, opportunity for service and honor. In no other land could a boy from a country village, without inheritance or influential friends, look forward with unbounded hope.

"My whole life has taught me what America means. I am indebted to my country beyond any human power to repay. It conferred upon me the mission to administer America's response to the appeal of afflicted nations during the war. It has called me into the Cabinets of two Presidents. By these experiences I have observed the burdens and responsibilities of the greatest office in the world. That office touches the happiness of every home. It deals with the peace of nations. No man could think of it except in terms of solemn consecration."

(Opp. 1320)

large share of his accumulations to philanthropic purposes. For some time he was a director of the Baltimore and Ohio Railroad. In 1873 he gave $4,500,000 to the establishment of the Hopkins Hospital in Baltimore, and by will bequeathed $3,500,000 to found the Johns Hopkins University (q. v.), one of the noted educational institutions of the United States. He established an orphan asylum for Negro children and a public park in Baltimore.

HOPKINS, Mark, educator, born in Stockbridge, Mass., Feb. 4, 1802; died June 17, 1887. In 1824 he graduated from Williams College, studied law at the Berkshire Medical School, and entered upon the practice of medicine in New York City. He was elected to the professorship of moral philosophy and rhetoric at Williams College in 1830, in which institution he remained until his death, but taught various branches of learning. In 1836-72 he served as its president. He resigned the presidency in the latter year, but remained incumbent of the chair of moral philosophy. In 1857 he accepted the presidency of the American Board of Foreign Missions. Hopkins was an efficient and thorough educator, of whom his pupil, James A. Garfield, said: "A log with a student at one end and Mark Hopkins at the other was his ideal college." His name is commemorated by Hopkins memorial hall at Williams College. Among his published works are "The Law of Love and Love as a Law," "Evidences of Christianity," "An Outline Study of Man," "Strength and Beauty," and "Scriptural Idea of Man."

HOPKINS, Stephen, public man, born at Providence, R. I., March 7, 1707; died July 13, 1785. He first engaged in farming, but became a merchant at Providence in 1742. He was speaker of the General Assembly in the colony of Rhode Island, served as chief justice of the superior court a number of years, and was elected Governor nine times between 1755 and 1768. From 1774 until 1776 he was a member of the Continental Congress, is a signer of the Declaration of Independence, and took a prominent part in promoting the sentiment for independence. For a number of years he was chancellor of Brown University, then known as Rhode Island College. He published the "Rights of Colonies Examined."

HOPKINSON (hŏp'kĭn-sŭn), **Francis,** author and statesman, born in Philadelphia, Pa., Sept. 21, 1737; died May 9, 1791. He studied in his native city, was admitted to the bar in 1761, and for some time practiced his profession. In 1776 he became a member of Congress from New Jersey, in which he took a prominent part in drafting the Articles of Confederation and in promulgating the Declaration of Independence, of which he was a signer. He became popular during the Revolution on account of his witty and satirical writings. In 1779 he was made judge of admiralty for Pennsylvania, serving until 1789, when he became a district judge. His most popular production, entitled "Battle of the Kegs," is a humorous description of an incident of the Revolution. Other writings include "Ode to Science," "Essay on Whitewashing," and "A Pretty Story."

HOPKINSON, Joseph, jurist, born in Philadelphia, Pa., Nov. 12, 1770; died Jan. 15, 1842. He graduated from the University of Pennsylvania and in 1791 began the practice of law at Easton, Pa. Soon after he removed to Philadelphia, where he became prominent as a counselor at law. In 1816 he was elected to Congress as a Federalist, serving until 1820, and was made United States district judge for the eastern district of Pennsylvania, in 1828. He was a patron of fine arts and a member of several philosophical societies. In 1798 he published the national song entitled "Hail Columbia," which became immensely popular.

HOPKINSVILLE (hŏp'kĭns-vĭl), a city in Kentucky, county seat of Christian County, seventy miles northwest of Nashville, Tenn. It is on the Illinois Central, the Louisville and Nashville, and other railroads. The surrounding country produces large quantities of wheat and tobacco and has extensive deposits of coal and iron. Among the manufactures are brick, wagons, farming machinery, earthenware, flour, and tobacco products. The chief buildings include the county courthouse, the high school, and several churches. It is the seat of Bethel Woman's College, a State insane asylum, and a fine hospital. It was settled in 1797 and incorporated the following year. Population, 1900, 7,280; in 1920, 9,696.

HORACE (hŏr'ās), **Quintus Horatius Flaccus,** distinguished Latin lyric poet, born near Venusia, Italy, Dec. 8, 65 B. C.; died Nov. 27, 8 B. C. His father was a slave who freed himself and when the son was twelve years of age he took him to Rome, where he secured a liberal education. Later he studied in Athens and after the assassination of Julius Caesar joined the army organized by Brutus. After the Battle of Philippi he fled for safety, but, when a proclamation of amnesty was issued, returned to Rome, where he had been reduced to poverty by the confiscation of his parental estate. Soon after returning to Rome he secured a clerkship in the office of the quaestor, in which he attracted the attention of Varius and Virgil. The latter introduced him to Maecenas, the minister of Augustus, who subsequently became his intimate friend. Soon after he was made poet laureate by the Roman emperor, enabling him to live in comparative ease.

In the later years of his life Horace devoted his attention exclusively to literature. His works include four books of *Odes,* eighteen *Satires,* two books of *Epistles,* a book of *Poems,* and several others. His "De Arte Poetica," or "Art of Poetry," is sometimes classed with his *Epistles.* The works of Horace have exquisite beauty of language and originality and are finely mingled with common sense, humor, piety, wit, and shrewdness. His writings have been translated into the leading languages. Several of his works are still studied in many high schools and colleges. No other Latin writer has furnished as many proverbial phrases as Horace, and no works surpass his in tender sentiment and exquisite style.

HOREB (hō'rĕb), **Mount.** See **Sinai.**

HOREHOUND (hōr'hound), a labiate plant found in Europe and Asia. Most of the species are herbaceous. The common horehound of Europe has downy leaves and stems, dense whorls of flowers, a bitter flavor, and an aromatic smell. It yields a volatile oil and a bitter fluid, which are used in the preparation of a tonic given as lozenges for coughs and colds. Many species have been naturalized in the United States.

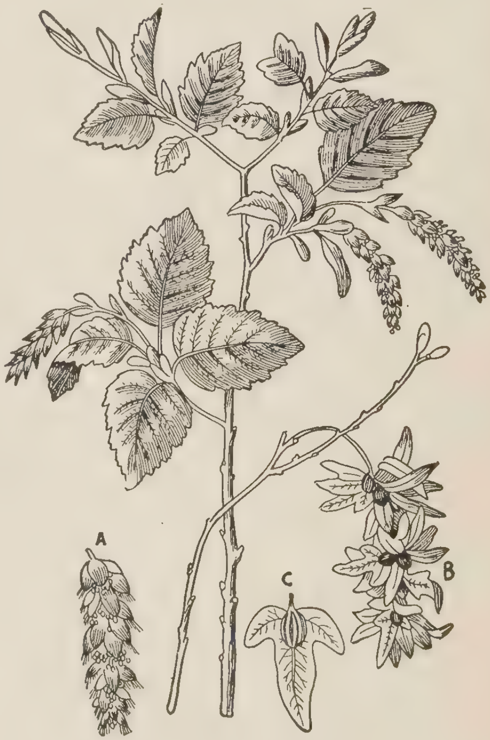
HORN, the name applied to a modification of the epidermis in animals, as the hoofs and horns of ruminants, the spines of porcupines, and the claws of birds. These parts are constituted of substances similar to those forming the anatomical structure of animals, but differ from them in the proportion of their parts. There are three classes of horns borne for defense on the heads of animals—those composed of bone, as the antlers of the deer; those consisting of epidermis or skin formations, as the horns of the rhinoceros and the buffalo; and those partly bone and partly epidermis, as in the case of the cow. Horns are either solid or hollow, and differ from each other in that some are single, while others contain a number of branches or prongs. Generally the single horn is hollow, and those containing prongs are of solid or bone formation throughout.

In commerce the term horn is often applied to the hoofs, claws, nails, bills, and quills of animals, and to the shell of the tortoise, but in a narrower sense it refers only to the appendages on the heads of animals. Horn formations contain both animal and mineral matter. They are tough, may be softened by heat, and are usually semitransparent. The horn growth differs widely in various animals, as, for instance, in the stag only the males have horns. Both sexes of most cattle have horns, but some species are hornless. In deer the horns are shed annually, while a horn once destroyed in cattle, goats, and sheep does not grow again.

The various kinds of horns are employed to manufacture many articles of commerce. They are used in making handles for knives and forks, canes, umbrellas, and walking sticks. Some enter into the manufacture of buttons, combs, snuffboxes, pipe tips, and ornaments. Besides, they serve a useful purpose in preparing a convenient vessel for powder and in making hat racks and decorative articles. Horn can be softened by heat and pressed into molds or split into sheets. When cooled, it resumes its former toughness and flexibility. Many dyes and other coloring matters can be employed to give it a lasting tint in color.

HORN, the name applied to a large number of different kinds of wind instruments. They were made formerly of the horns of animals, but these have fallen more or less into disuse. The musical instrument now designated particularly by that name is manufactured largely in France. It consists of a metal wind instrument furnished with a *mouthpiece* and a *bell.* The Saxe horn and other military horns, as well as those used in bands, are usually some form of the *French horn.* Instruments which belong to the class known as *horns* are seldom played singly in the orchestra. A pair and more frequently two pairs are employed.

HORNBEAM (hôrn'bēm), the name of a small tree, so called because the wood has been used extensively for making yokes for cattle. The common hornbeam, or yoke elm, is native to Western Asia and the temperate parts of Europe. The trunk is frequently flattened and twisted and covered with a smooth and light gray bark. The roots descend deep into the ground. In moist and shady places this species frequently attains a height of sixty to ninety feet. The wood is white and quite hard and is used by carpenters and wheelwrights. The hornbeam of North America is a smaller tree, usually from twenty to forty feet in height, and



HORNBEAM.
A, Flowers; *B*, *C*, Fruit.

is found from Quebec to the Gulf of Mexico. Locally it is called ironwood, blue beech, or water beech. A similar tree known as hop hornbeam, locally known as leverwood, is of slow growth and has very hard and heavy wood.

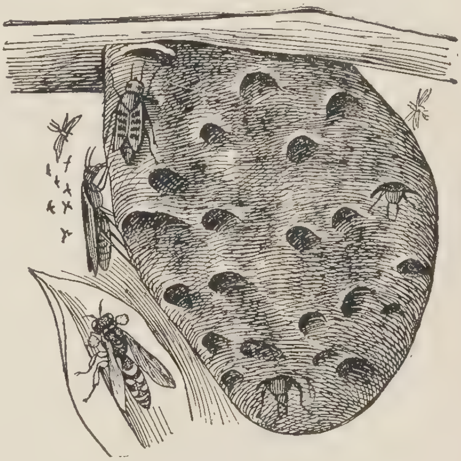
HORNBILL, the name of a family of large birds native to Africa and the East Indies. They are related to the kingfishers and toucans, and, like the latter, have very large bills. The bill is broad at the base and compressed toward the tip, and in most species a large bony protuberance surmounts the upper part. The rhinoceros hornbill is the largest species. It has an expanse of wings of about three feet, is four feet long, and the upper mandible has a peculiarly large protuberance. It is stupid and cowardly, showing little boldness except when in search of food, and the flight is rather slow. The female, after laying four or five eggs, sits on the nest until the young are fully fledged, usually eight or ten weeks. In the meantime the male plasters the opening of the nest over with clay, leaving only a slit three or four inches long and sufficiently wide to permit the entrance of its head, and through this the female and young are fed. During this time the male becomes lean, but the female gets very fat and is considered a dainty by the natives.

HORNBLENDE (hôrn′blĕnd), a subvariety of aluminous amphibole. It is one of the five most abundant simple minerals of which rock is composed. The others are mica, quartz, feldspar, and carbonate of lime. It occurs in various forms, differing in the composition of its crystalline particles. In color it is greatly diversified. It is found as a constituent of trap rock and with such igneous forms as granite and gneiss. Some species of hornblende are transparent and others are opaque. The colors predominating are white, brown, and black.

HORNED TOAD, or **Horned Frog,** a genus of horny lizards of North America, which somewhat resemble a toad or frog. They are found chiefly in the western part of North America, especially in the arid plains and mountains, extending from Alberta to the central part of Mexico. They lie close to the ground, usually among weeds and cacti, and the color somewhat resembles that of the surrounding objects. Several species have been described, but all have a more or less circular or oval body, which is flattened and covered with scales surmounted by horny spines. They are sluggish in their movements and pass the winter in holes dug by various rodents. The food consists of ants, flies, and other insects.

HORNELL (hôrn-ĕl′), a city of New York, in Steuben County, on the Canisteo River, 57 miles south of Rochester. It is on the Erie and other railroads. The chief buildings include the high school, courthouse, post office, and the public library. It has a growing trade in merchandise. Among its industries are railroad shops, silk mills, glove factories, iron foundries, wood works, and machine shops. The public utilities include sewerage, pavements, waterworks, and several bus lines. It was settled in 1790 and was called Upper Canisteo until 1820, when it was incorporated under its present name. Population, 1905, 13,259; in 1925, 15,784.

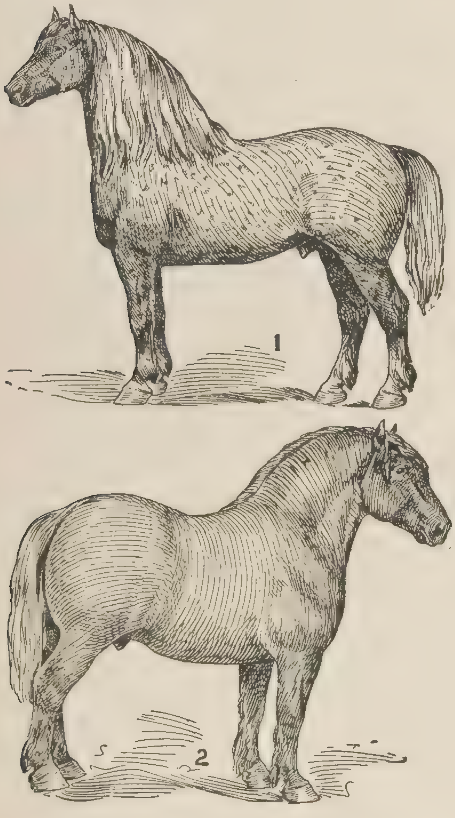
HORNET (hôr′nĕt), a stinging insect of the family *Vespidae* and the genus *Vespa.* It is larger than the common wasp, being about an inch long, and has a more venomous sting. The hornets are widely distributed in North America and other grand divisions. They are usually black or dark brown and are ornamented with white and yellow. Several species of Asiatic hornets attain to a length of fully two inches and are peculiar for their bright colorings. Their nests are built in the large trunks of trees and in old walls, and some species construct a kind of paper work, which is hung in the branches of trees. They live in communities, which consist of about 200 insects. Hornets feed on the sap of trees and on fruit and honey. Some prey on other insects. The sting is very painful, that of some species causing fevers in men and cattle.



HORNET AND NEST.

HORSE, a genus of quadrupeds classed with the zebra and the ass. It is distinguished by an undivided hoof, a mane on the neck, a simple stomach, and lips and teeth adapted for cropping short herbage. Careful breeding has developed many kinds of horses, all of which are distributed more or less widely. They serve more important purposes than any other animal as beasts of burden and draft. It is thought that Central Asia is the nativity of the horse, but some contend that it was first domesticated in Egypt. Writers generally agree in expressing the view that the horse was brought to Western Europe at an early date, a fact evidenced by remains found in caves in Switzerland and figures of horses cut on rocks.

The Scriptures mention the horse in connection with warfare and with the arts of peace among the ancient Egyptians. Prior to the discovery of America, horses were unknown in the Western Hemisphere. Those met with in a wild state in South America descended from animals introduced by Spanish settlers. Fossil remains found in America indicate that an animal similar to the horse existed in remote ages, but it was much inferior to the species common to the Old World, even to those known in Egypt during the time of the Pharaohs. Forty or more species have been discovered in the Tertiary deposits of North America, but all were comparatively small and none was represented by living forms at the time of the discovery by Columbus. It is assumed that the horse developed from a small and inferior class of animals, about three feet tall, and that this early class is now extinct, the wild horses of Tartary and other regions being descendants of animals that escaped from domestication and gradually developed into the present wild and inferior form.



1, PERCHERON; 2, BELGIAN.

The horses of Arabia are classed as the most beautiful breed and excel in swiftness, endurance, and perseverance. The European breeds came largely from importation of the Arabian, and have been more or less intermingled with the different classes which were previously common to the West. In America horse breeding has attained a high state of development and constitutes one of the important industries. Among the classes used for draft and agriculture are the Clydesdale, Percheron, and Belgian; those used for speed embrace the Hambletonian, Morgan, and French coach; and the ponies include the Shetland, Galloway, and Indian. These races of horses are interbred more or less with each other and with other grades, and represent classes possessing qualities of superiority for various purposes, including several species which may be considered strictly American, such as the Kentuckian.

The horse is characterized by its acuteness of the senses, ability to observe danger, and strength of memory. By suitable food and careful treatment it can be made to serve man in all the arts of war and peace. The period of gestation is a trifle over eleven months and the age of puberty is reached at two years. At the age of from three to four years the horse begins to come into its higher state of usefulness, but lives to an age of from twenty to thirty years, serving with more or less profit during the entire time after being broken for work. In docility it surpasses all the domestic animals, except the dog and possibly the elephant.

Corn, hay, oats, barley, and beans constitute the principal food for horses, but they thrive well when given a variety of these and small quantities of linseed, bran, carrots, and straw. For driving and running purposes it is best to feed oats largely, while for heavy work corn is the staple food. Until about nine years old the age can be estimated by the marks on its teeth, but after that it is difficult to determine. Horse flesh is used for food in some countries. The hide is an important material for the manufacture of leather and in making robes and rugs, and the tail and mane are utilized for hair cloth and upholsterers' products. The introduction of electric street cars, bicycles, and automobiles has lessened the use of horses to some extent, but, on the other hand, the development of natural resources in new countires has widened it correspondingly. The running record of American race horses is among the best in the world. "Black Beauty," written by Anna Sewell, is one of the most beautiful works on the horse. Literature abounds with valuable and interesting productions relating to the horse and its uses.

HORSE CHESTNUT, a genus of trees widely distributed in North America and other continents. The leaves are opposite and quite large, and the seeds are unpleasantly bitter. The seeds contain considerable starch, which is prepared for the market by freeing it from bitterness through repeated washing with an alkaline solution. The species native to North America do not have wood of material value and the seed is quite small, but the true chestnut has nuts that are quite valuable as food for swine, sheep, oxen, and horses. The latter is native to Tibet and has been naturalized in many parts of Europe, where it is cultivated for its wood and for the nuts. The chestnut of North America ranges from Canada to Mexico and is especially abundant in various parts of the Mississippi Valley.

HORSE POWER, the unit of force employed in measuring the power of engines, waterwheels, and other prime movers. The term was obtained by Boulton and Watt from observing the dray horses employed in London. They found that a horse is able to go at a rate of two and one-half miles per hour, and at the same time raise a weight of 150 pounds by means of a rope placed over a pulley, hence they estimated the horse power, the horse working eight hours per day, at 33,000 foot pounds per minute. From this circumstances it is estimated that a horse power is equal to a force which will raise a weight of 33,000 pounds one foot in one minute. An engine of ten horse power has the power to raise the same weight ten times that distance in one minute. In practice it is necessary to deduct one-tenth for friction, hence the estimate given is theoretical.

HORSE-RADISH, a perennial plant with long stalks, cylindrical roots, and whitish flowers. It is cultivated in many portions of America, but grows vigorously in all kinds of soil after once getting a foothold. The roots possess medicinal qualities. They are used extensively as a condiment for table purposes. Their medicinal qualities are diuretic, stomachic, and diaphoretic. Several preparations are employed as external applications.

HORSESHOE, a plate of iron bent into the form of the hoof of a horse, and fastened to the bottom of the same by nails driven through the outer layer and clinched upon the outside. Shoes intended for use upon icy roads are provided with steel points called *corks,* one at the toe and one at each heel of the shoe. Those used for horses employed for draft purposes on soft roads have corks of iron, and those for shoeing driving horses are quite smooth or have blunt corks. Iron shoes are used to some extent for oxen, but they are of two parts on account of the clefts in the foot, and are made to fit the bottom of the hoof. The practice of providing a protection to the feet of horses and mules is quite ancient, and originated from the utility of furnishing security against these animals becoming footsore in the time of war. Xenophon and other writers mention certain methods of rendering the hoofs harder as a protection against rough and stony roads. Leather coverings are used to some extent to protect the feet of camels on long journeys. The lower part of these is made from oxhide much like heavy soles in the shoes of modern times. Horseshoes made of iron were introduced into Europe about the 9th century and the custom was taken to England by the Normans. At present this class of horseshoes is used in practically all countries, especially for draft and driving horses, but those used in farming are generally unshod.

HORSESHOE CRAB. See **King Crab.**

HORSETAIL RUSH, or **Scouring Rush,** the common name of the *Equisetum,* a genus of small plants belonging to the fernwort family. About 25 species are represented in the living flora, and they are classed with an extensive race of plants that predominated in the Mesozoic and Carboniferous times. Formerly they were of great size, in fact enormous trees, but the living species are quite small. They are characterized by having spore-bearing leaves. The plants are unisexual; that is, different plants produce the male and female organs.

HORSLEY (hôrs′lĭ), **Victor Alexander Haden,** surgeon, born in Kensington, England, April 14, 1857; died in 1916. He studied medicine in London and was appointed on the surgical staff, and in 1884 became professor and superintendent of the Brown Institution. In 1891 he was made professor at the Royal Institution, serving until 1893, when he became professor of pathology in the University College. His reputation is based largely upon researches in cerebral localization and the study of nervous diseases. His numerous important medical works include "Hydrophobia and Its Treatment," "The Structure and Functions of the Brain and Spinal Cord," "Brain Surgery," "Pathology of Epilepsy and Canine Chorea," and "An Experimental Investigation of the Central Motor Innervation of the Larynx."

HORTICULTURE (hôr′tĭ-kŭl-tûr), the art or science relating to the cultivation of garden plants for decorative and useful purposes. The main divisions of horticulture are *pomology,* or fruit growing; *floriculture,* or flower growing; and *olericulture,* or vegetable growing. It is properly a branch of agriculture and like the latter has made rapid progress in America. Many species of shrubs, flowers, and fruit-bearing trees have been naturalized in the different soils and climates, thereby rendering the garden and orchard more productive and profitable. In planting gardens and orchards it is essential to take into account the character of the soil, the drainage, and the slope of the surface. Fruit trees usually thrive best in a rich, dark loam, while early crops and vegetables yield the best returns in a sandy loam. Systematic drainage is essential for the reason that cultivation is most effective in well-drained surfaces, and freezing is thereby rendered less injurious to the growing trees. A slope facing the sun is preferable for orchards in some climates, but in northern latitudes, where frosts appear late in the spring, it is much better to select a slope toward the north for the reason that the early sap flow occasioned by the warm sun in the early part of the year will, when followed by frost, cause a rupture of the cells and consequently result in damage to the tree.

Next of importance to selecting choice species of plants and a suitable location is the careful fertilization and cultivation of the soil. Thorough tilling permits the essential elements of the air to penetrate to the roots, while the destruction of weeds and insects is essential in preserving both the tree and the vigor of its fruit. To succeed in the culture of flowers and ornamental plants it is quite necessary to construct plant houses, pits, greenhouses, and other structures with the view of securing early development. The art of grafting and propagating plants has led to wholesome results and greater profit. Suitable instruments, tools, and various forms of machinery patented within recent years have facilitated the culture to a great extent. Besides, the operation of railroad lines in various directions has opened a wider market in city and country districts for fruit and ornamental products, making it possible for the inhabitants of the colder regions to enjoy largely the more delicate products grown in the warmer climates.

The United States is the leading fruit-growing country of North America. Apples, which can be grown in all the states, comprise the leading crop and yield about 30,000,000 barrels per year. California has first place in the yield of citrus fruits and ships about 32,500 car loads annually. Florida holds second rank in the production of citrus fruits. Peaches, pears, tomatoes, grapes, bananas, strawberries, and many other fruits are grown more or less extensively. Canada and the southwestern part of the United States have made remarkable progress in the number of species and the quantity of fruits produced. Both countries make large shipments to foreign ports.

HOSEA (hō-zē'ȧ), a Hebrew prophet, classed as the first of the minor prophets, who flourished about 750 B. C. He was the son of Beeri and ministered in the reigns of Uzziah, Jotham, Ahaz, and Hezekiah, kings of Judah. His name does not appear in any book of the Old Testament, except the one which bears his name. In the New Testament he is mentioned by the name Osee. His prophetic activity was directed chiefly against the idolatrous apostasy of the Israelites.

HOSMER (hŏz'mẽr), **Harriet,** sculptor, in Watertown, Mass., Oct. 9, 1830; died Feb. 21, 1908. She studied modeling in Boston and anatomy in Saint Louis Medical College, and in 1852 took a course in art at the studio of John Gibson in Rome, Italy. In 1856 she sent her statue of "Puck" to be exhibited in Boston, which was so finely executed that it caused many leading people to order copies of the same, among them the Prince of Wales. She exhibited the "Sleeping Fawn" at the Paris Exposition in 1867, which is counted one of her best works, and the companion work entitled "A Waking Fawn" is equally popular. She was given a commission by the Legislature of Missouri to complete a bronze statue of Thomas Benton, now in Lafayette Park, Saint Louis. Other productions include "Queen of Naples," "Zenobia in Chains," and "Heroine of Gaeta."

HOSPITAL (hŏs'pĭt-al), an institution for the reception, care, and medical treatment of the sick and wounded. The term was applied formerly to a place of hospitality for those in need of shelter and maintenance. This application is still made to institutions built for the care of children, and in some cases to retreats or almshouses for the poor. Hospitals of a general character established in modern times are designed for those who are more or less dependent upon the public, or who are afflicted so as to make it a matter of public policy to extend aid. However, many institutions of this kind are built with the view of supplying the demand of those who prefer to be treated when sick in a hospital rather than in the home. Frequently private families and societies have special departments in readiness for use when needed in such institutions. In many instances the hospitals are maintained by appropriations or donations made by private individuals, but more largely by the city, county, or state under a system of general taxation. In these institutions departments or wards are provided, each being in charge of a separate force of attendants, and the whole is supervised by a matron, house surgeon, and apothecary. Patients afflicted with contagious diseases are kept and treated separately. Special departments are provided for those having ailments likely to prove fatal.

During the time of military operations field and naval hospitals are maintained for the care of sick and wounded soldiers and seamen. The hospitals are either temporary or permanent, the former serving immediate wants, while in the latter prolonged cases are treated. Sick or wounded seamen are usually taken on board of hospital ships, where they are given treatment for a brief period. Later they are transferred to the nearest permanent hospitals, or conveyed to their homes. The care and treatment of sick and wounded military men have made material progress within recent years. They have attracted the attention of philanthropists and of various societies, such as the famous Red Cross.

General hospitals were first established in the 4th century of the Christian era, and since then have spread to all the civilized nations. The United States, Canada, and the countries of Europe have excellent facilities for the care of unfortunates in hospitals. Some of the finest institutions provided by the government are maintained for that purpose. The hospitals of New York, Philadelphia, Chicago, Saint Louis, San Francisco, Montreal, and Toronto are especially noteworthy. The most important of Europe are in London, Berlin, Vienna, Paris, and Saint Petersburg. In Europe the institutions of this

LUSCIOUS FRUITS.

(Opp. 1326)

Strawberries.
Cherries.

Plums.
Red Raspberries.

character date largely from the early part of the 16th century.

HOTCHKISS, Benjamin Berkely, inventor, born in Watertown, Conn., Oct. 1, 1826; died Feb. 14, 1885. He became an employee in a gun factory at an early age and for some time worked in connection with Samuel Colt. In 1860 he designed an improved system of rifle projectiles, which was afterward adopted by the United States government and used in the Civil War. He made the Hotchkiss machine gun in 1882 and later designed improvements in heavy ordnance and projectiles. Many of his rapid-firing guns were used by the leading armies and navies of the world for several decades. He died in Paris, France, where he established and managed a large gun factory.

HOTEL (hô-tĕl'), a large inn or house for the reception and entertainment of strangers or travelers. The larger hotel buildings of the larger cities are among the finest and best equipped institutions of modern times. They are usually built fireproof throughout, or have fireproof construction in one or more of the lower floors, and are equipped with electric lighting, steam heating, hot and cold water service, baths, telephones, and elevators. The basement usually contains the heating and electric lighting plants, the laundry, the sample rooms, and a general lavatory. The first floor of a modern hotel has the office, the lobby, the news and cigar stands, one or more reception rooms, and rooms for the café, a drug store, a barber shop, a gents' furnishing store, and several small offices. In most instances the parlor and one or more writing rooms are on the second floor, which likewise has the best rooms for guests. All of the floors are reached by elevators and are furnished with fire escapes.

Two general plans of service are in vogue, known as the European and the American. The *European* plan is to place a price upon each particular kind of food enumerated on a bill of fare and extend to the guest the privilege of ordering what he pleases. In fact, the matter of board is entirely separate from lodging, since the guest registers only to take a room at a specified rate per day, and he may secure his meals wherever he chooses. This practice has been adopted with more or less favor in many of the American cities. The *American* plan is to serve a general meal without special orders. Under this plan the guest pays for his lodging and board at a specified price per day or per week.

HOT SPRINGS, a city in Arkansas, county seat of Garland County, fifty miles southwest of Little Rock, on the Chicago, Rock Island and Pacific and the Missouri Pacific, and other railroads. The noteworthy buildings include the Federal Army and Navy Hospital, the high school, many public bathhouses, and the Eastman, Arlington, and Majestic hotels. Building stone is quarried in the vicinity. It has a large trade in cotton, fruit, and mechandise. Hot Springs is celebrated for its thermal springs, about 75 in number, some of which have a temperature of 130° Fahr. Electric lights, waterworks, rapid transit, and sewerage are among the improvements. The place was settled in 1804 and was incorporated as a city in 1879. Population, 1900, 9,973; in 1920, 11,695.

HOTTENTOT (hŏt't'n-tŏt), the descendants of the aborigines of the southern part of Africa. When South Africa was first visited by Europeans, this peculiar race occupied a territory including about 100,000 square miles, from the Cape of Good Hope to the Orange River, but subsequently the number has been reduced greatly. A late census of Cape Colony places the Hottentot population at 90,000, but these are mixed more or less with other races, the total number of purely Hottentot inhabitants being about 20,000. The name was first applied to them by the Dutch; they call themselves Quaqua. The complexion is light brown, the hair is wooly, and the nose is flat.

HOUDON (ōō-dôn'), **Jean Antoine,** sculptor, born at Versailles, France, March 20, 1741; died July 16, 1828. He studied in Paris, where he gained the great prize at the School of Fine Arts, and later spent seven years in Rome. In 1771 he made his first exhibit at the Salon. He was invited to the United States by Benjamin Franklin and soon after he made the portrait statue of Washington which is now in the state house at Richmond, Va. His chief works of a larger class are the "Statue of Voltaire," "Diana the Huntress," "Morpheus," "Ecorché," and "Statue of Saint Bruno."

HOULTON, county seat of Aroostook County, Maine, 140 miles northeast of Bangor, on the Canadian Pacific and other railroads. It has paving, sanitary sewers, woolen mills, and a brisk trade. The features include the courthouse, high school, public library and federal building. It was settled in 1807 and incorporated in 1831. Population, 1920, 6,191.

HOUMA, parish seat of Terrebonne Parish, La., 70 miles southwest of New Orleans, on the Bayou Terrebonne and on the Southern Pacific Railway. The features include the high school and the parish courthouse. It was settled in 1820 and incorporated in 1870. Population, 1920, 5,160.

HOUGHTON (hō'tŭn), a village of Michigan, county seat of Houghton County, 95 miles northwest of Marquette, on the Copper Range and the Duluth, South Shore and Atlantic railroads. It is located on Portage Lake, near Lake Superior, and has transportation facilities by a canal. The surrounding country is a rich mineral district, chiefly of copper. The principal buildings include the high school, the county courthouse, and a number of fine ward schools and churches. It is the seat of the Michigan College of Mines. Electric lights, waterworks, and a library are among the public utilities. Population, 1904, 4,345; in 1920, 4,456.

HOUND, a class of dogs useful in hunting, noted for their ability to locate game by the scent. The best known species include the bloodhound, staghound, foxhound, beagle, harrier, and greyhound. In the last named the scent is less acute. Hounds are noted for their docility and attachment to man and, when properly trained, are of much service. See **Dog.**

HOURGLASS, an invention made at Alexandria, Egypt, in the 3d century, and used for measuring time. It consists of two hollow glass bulbs connected by a narrow neck, through which dry sand or some other substance passes. The instrument is not absolutely accurate, as the sand is impeded or affected by the fluctuations of temperature and the humidity contained in the air. Hourglasses are divided into hourglasses proper, and those having a shorter period, as half-hour and three-minute glasses. In the 16th and 17th centuries hourglasses were used as regular pulpit furniture to indicate the length of the sermon, being placed where the congregation could see the grains of sand falling from the upper to the lower bulb.

HOUSATONIC (hōō-sa̤-tŏn'ĭk), a river of western Massachusetts and Connecticut. It rises in the former State, flows through Connecticut, and after a course of 150 miles discharges into Long Island Sound. It passes through a rich country, affords an abundance of water power for manufacturing, and is affected by tide water for fourteen miles.

HOUSE, Edward Mandell, public man, born at Houston, Texas, July 26, 1858. He studied at Cornell University and became active as a democrat politician, although he never was a candidate for office. President Wilson made him his personal representative to Mexico in 1914 and subsequently sent him on a mission to investigate the affairs of several European governments. In 1917 he was made the American representative to the Supreme War Council at Versailles, and in 1918 became one of the five United States commissioners to the Paris Peace Congress.

HOUSE BOAT, a raft with a flat bottom, designed as the support of a house with several rooms. The first structures of this kind were made by fishermen, who designed them as habitations during the fishing season, and later they came into use for the homes of people who were unable to own land.

HOUSEFLY. See **Fly.**

HOUSELEEK, or **Live-Forever,** a genus of plants with thick, succulent stems and leaves. They are cultivated for their ornamental flowers. Several species are native to the region extending from Siberia to Italy, but the cultivated plants have been improved and are popular in gardens and parks. The common houseleek has flowering stems from six to twelve inches in height, and is the cyphel that grows on the rocky soil of the Alps in Europe. The flower stems and the blossoms have a beautiful roseate hue. It is hardy under cultivation and the flowers vary in color, though they are usually red or yellow. The juices of the leaves are considered cooling when applied to ulcers, burns, and inflammations.

HOUSTON (hūs'tŭn), a city in Texas, county seat of Harris County, fifty miles northwest of Galveston. It is on the Missouri, Kansas and Texas, the International and Great Northern, the Southern Pacific, the Gulf, Colorado and Santa Fé, and other railroads. The chief buildings include the Carnegie Public Library, the high school, the Federal building, the county courthouse, the Masonic Temple, the Rice Polytechnic Institute, and the cotton exchange. It has a fine union railroad depot. Among the manufactures are furniture, railroad supplies, oil, cotton and woolen goods, railroad cars, farming machinery, and packed beef. The cottonseed oil factories are among the largest in the United States. The surrounding country is agricultural and fruit producing and contains deposits of cement-producing minerals. Among the facilities are electric street railways, street lighting, sewerage, pavements, and an extensive sewer system. The place was settled in 1836 and was named in honor of Samuel Houston. Population, 1900, 44,633; in 1920, 138,276.

HOUSTON, David Franklin, public man, born at Monroe, N. C., Feb. 17, 1866. He received degrees from Harvard and Tulane universities, became superintendent of schools at Spartanburg in 1888, and later was professor at Harvard and the University of Texas. In 1902 he became president of the Texas College of Agriculture and mechanics. President Wilson appointed him Secretary of Agriculture in 1913. He is a writer on educational topics.

HOUSTON, Samuel, general and president of the republic of Texas, born in Rockbridge County, Virginia, March 2, 1793; died July 25, 1863. His father died when Samuel was a boy, and the latter moved with his mother to Tennessee, where he spent a number of years among the Cherokee Indians. He enlisted in the United States army in 1813, and for bravery in the Creek War was made lieutenant. Shortly after he left the army and engaged in the practice of law in Tennessee. In 1823-27 he served in Congress as a Democrat and in the latter year became Governor of the State. In 1829 he left his former home and lived for some time among the Indians of Arkansas, whom he represented at Washington as commissioner. In 1832 he visited Texas and soon after became commander in chief of the Texan army in the war against Mexico. His success at San Jacinto over Santa Anna on April 21, 1836, secured the independence of Texas. In the same year he became the first president of the republic and was reëlected in 1841. When Texas was admitted into the Union in 1845, he became a United States Senator, serving in that position twelve years, and in 1859 was elected Governor of the State. He opposed secession in 1861.

HOVEY (hŭv'ĭ) **Richard,** poet, born at Normal, Ill., in 1864; died in 1900. He is the author of several meritorious poetic works, including a number that have been dramatized. They give evidence of much imaginative power and musical talent. Among his works are "Along the Trail," "The Quest of Merlin," "The Birth of Galahad," "The Marriage of Guenevere," "Launcelot and Guenevere," and several songs published with Bliss Carman.

HOWARD (hou'ẽrd), **John,** philanthropist, born in Middlesex, England, Sept. 2, 1726; died Jan. 20, 1790. He inherited a fortune from his father. In 1756 he undertook a voyage to Lisbon to study the effects of an earthquake, but was taken captive and consigned to a French prison. His sufferings during confinement caused him to devote his attention to the study of prison methods and the reform in their management. After visiting houses of correction in England, Germany, and Russia, he published several works on prisons and hospitals. His self-denial and benevolent work brought about many needed reforms.

HOWARD, Oliver Otis, general, born in Leeds, Me., Nov. 8, 1830. In 1850 he graduated from Bowdoin College and in 1854 at West Point, where he became instructor in the military academy. In 1861 he was made colonel and for gallant service at the Battle of Bull Run became brigadier general. At the Battle of Fair Oaks, in 1862, he lost his right arm, but subsequently commanded in the battles of Antietam, Chancellorsville, Gettysburg, and Chattanooga, and accompanied Sherman on his march to the sea. In 1865 he became a commissioner of the Freedmen's Bureau, a position he held until it was closed in 1872. He was chosen president of Howard University in 1869, an institution established at Washington for the education of Negroes. In 1877 he commanded an expedition against the Nez Percés Indians and detailed information of the campaign in his book, "Chief Joseph." The following year he defeated the Pintes, was promoted major general in 1886, and retired in 1894. His eldest son, Guy Howard, was killed in action in the Philippines on Oct. 21, 1899. He served against the Indians in 1876 and became captain in 1893. In 1898 he was promoted lieutenant colonel. He was at the front with General Lawton at the time he was slain in battle. He died Oct. 26, 1909.

HOWE, Elias, inventor, born in Spencer, Mass., July 9, 1819; died in Brooklyn, N. Y., Oct. 3, 1867. He developed his invention of the sewing machine while engaged in factories at Lowell and Boston. His first machine was completed in 1845 and patented the following year. Shortly after he sought to introduce his invention in England, but failed, and on returning to Boston found that his patent had been infringed by several manufacturers. After a litigation of seven years, the principal manufacturers were defeated and agreed to pay royalty to Howe. The total fortune derived from his invention amounted to $2,000,000. He was given the cross of the French Legion of Honor.

HOWE, Joseph, statesman, born in Halifax, N. S., Dec. 13, 1804; died June 1, 1873. He became a journalist and was elected to Parliament in 1836. In 1863 he became premier of Nova Scotia and in 1869 accepted a place in the Dominion cabinet. He was made lieutenant-governor of Nova Scotia in 1873.

HOWE, Julia Ward, poetess and authoress, wife of Dr. Samuel C. Howe, born in New York City, May 27, 1819. Her education was liberal, and, after her marriage in 1843, she was associated with her husband in editing the *Commonwealth,* a periodical opposed to slavery. Her essays and poems are numerous and contain a vein of deep thought and devoted study. In 1885 she was chief of the woman's department of the New Orleans World's Fair, served a number of years as president of the woman's suffrage movement, and secured a reputation for philanthropic labors. Her publications include "Passion Flowers," "Modern Society," "Words for the Hour," and "Life of Margaret Fuller." In 1861 she published the poem, "Battle Hymn of the Republic." She died Oct. 17, 1910.

HOWE, Richard, admiral, born in England, March 19, 1725; died Aug. 5, 1799. He studied a short time at Eton and Westminster and in 1739 became a midshipman under Anson, who designed to make a voyage around the world. In 1758 he succeeded his brother as viscount of the Irish peerage, but continued to render distinguished naval service until the end of the Seven Years' War. He relieved Gibraltar in 1782, for which he was made first lord of the admiralty, and in 1788 he was created earl. He defeated the French off the coast of Brest in 1794, the victory being known as that of "the glorious first of June." Parliament voted thanks to him for this success, while George III. gave him a sword and made him a Knight of the Garter.

HOWE, Timothy Otis, statesman, born at Livermore, Me., Feb. 24, 1816; died March 25, 1883. He studied law and was admitted to the bar. In 1840 he was elected to the State Legislature of Maine, but ill health caused him to remove to Green Bay, Wis., where he resided the remainder of his life. He became judge of the circuit and supreme courts of Wisconsin in 1850, and in 1861 was elected to the United States Senate as a Republican, serving efficiently until 1879. Though offered the position of associate judge of the United States Supreme Court as successor to Salmon P. Chase, he declined. President Arthur appointed him Postmaster-General in 1881.

HOWE, Sir William, military officer, born in Plymouth, England, Aug. 10, 1729; died July 12, 1814. He was educated at Eton and joined the army under General Wolfe at Quebec. In 1775 he became commander in chief of the British forces in America, succeeding Gen. Thomas

Gage, and was superseded by Clinton in 1778. General Howe commanded in the battles of Bunker Hill, Long Island, White Plains, and Brandywine. He was accused of mismanagement, but was acquitted by Parliament after an investigation, and in 1779 succeeded to the Irish peerage.

HOWELLS (hou′ĕlz), **William Dean,** novelist, born in Martin's Ferry, Ohio, March 1, 1837. He learned the printer's art in the office of his father and became compositor on the *Ohio State Journal* in 1851. In 1860 he wrote "Life of Lincoln," which he sold for $160. In 1861-65 he was consul at Venice, where he published his "Venetian Life" and later "Italian Journeys." After returning to America, he was engaged on the staffs of the New York *Tribune* and the *Times.* He contributed to the *Atlantic Monthly* and *Harper's Monthly,* and in 1892 was editor of the *Cosmopolitan.* The style of Howells' writings is charming. They are characterized by a pathetic humor and keen observation. His best known works include "Their Wedding Journey," "A Foregone Conclusion," "The Rise of Silas Lapham," "Modern Italian Poets," "On the Coast of Bohemia," "Quality of Mercy," "Lady of the Aroostook," "Five O'clock Tea," "Sleeping-car," "A Parting and a Meeting," "A Modern Instance," and "A Hazard of New Fortunes." He died May 11, 1920.

WILLIAM DEAN HOWELLS.

HOWITT (hou′ĭt), **William and Mary,** two English writers. The former was born in Heanor, England, in 1792, and, after serving an apprenticeship to a cabinetmaker, engaged in the study of literature. In 1823 he married Mary Botham, a lady of literary acquirements. She was born at Uttoxeter, England, March 12, 1799, and, like William, descended from a Quaker family. The two began to contribute to magazines and annuals shortly after their marriage and in the meantime published jointly several productions of much literary merit. Their publications include "Literature and Romances of Northern Europe," "Book of the Seasons," "The Desolation of Eyam," and "Ruined Abbey of Great Britain." In 1840 they removed to Heidelberg, Germany, where Mary translated Hans Andersen's works into English. While there William wrote "Aristocracy of England" and "Homes and Haunts of the British Poets." Subsequently they settled in Rome, Italy, where both died, William on March 3, 1879, and Mary on Jan. 30, 1888.

HOWITZER (hou′ĭts-ẽr). **See Gun.**

HOWLAND, Sir William Pierce, statesman, born at Paulings, N. Y., May 29, 1811. He studied at Kinderhook Academy and in 1830 went to Canada, where he was elected to Parliament in 1857. His efficient public service caused him to be appointed Minister of Finance in 1862, Receiver-General in 1863, and Lieutenant Governor of Ontario in 1868. For some years he was president of the Toronto Board of Trade, the Gold and Silver Mines Developing Company, and the Confederation Life Assurance Company. In politics he was active as a Liberal. His son, Oliver Aiken Howland (born, 1847), was educated at Toronto University. In 1894 he became president of the International Deep Waterways Association and for some years served as an influential member of Parliament. He founded the Union of Canadian Municipalities, of which he was elected president for several terms. The former died Jan. 1, 1907.

HOWLER (houl′ẽr), or **Stentor,** a kind of monkey native to South America, so named from the hideous howls it utters. The hyoid bone is expanded into a hollow drum, which communicates with the larynx and acts as a resonator. In the males it is much larger than in the females. The hair is long, the tail is prehensile, and the thumbs are large. In size this monkey is the largest of America. Ten or twelve species of howling monkeys have been listed. The *ursine howler* is black or dark brown with yellow markings, and the *golden howler* has a chestnut-red color diversified with yellow on the back. The latter furnishes the principal food for the natives in many parts of the Andes. Some of the species are peculiar in that they hang from the limbs of trees, suspended by their tails, and utter sounds that can be heard more than a mile at night.

HOWRAH (hou′rä), a city of India, on the Hugli River, opposite Calcutta, with which it is connected by a floating bridge. The chief buildings include many churches, temples, schools, hospitals, and government structures. It has good railroad and electric railway connections. The manufactures include fabrics, furniture, machinery, utensils, and toys. Howrah is a modern city and has many municipal utilities. In 1785 it was little more than a small village of huts. It is now a suburban section of Calcutta. Population, 1922, 161,535.

HOYT, John Wesley, educator, born near Worthington, Ohio, Oct. 13, 1831. He studied at Wesleyan University, where he graduated in 1849, and afterward took courses in law and medicine. In 1857 he became editor of the *Wisconsin Farmer* at Madison, holding in the meantime several important positions in agricultural societies, and in 1862 was commissioner to the London Exposition and five years later filled the same office at the Paris Exposition. His administration was so successful that he was made commissioner to the Vienna Exposition in 1873, serving as president of the international bureau for education and science, and was knighted the following year by the Emperor of Austria. He became Governor of Wyoming in 1878, serving in that position four years, and in 1887 was chosen president of Wyoming University. He was commissioner to the King of Corea in 1897, in which position he was instrumental in procuring the admission of that country into the postal union. His books include "Resources and Progress of Wisconsin," "History of University Education," and "Of Appointment and Removal." He died May 23, 1912.

HUBBARD (hŭb'bẽrd), **Elbert,** publisher, born in Bloomington, Ill., in 1859; drowned May 7, 1915. He studied in Illinois and settled at East Aurora, N. Y., where he established the Roycroft Shop, an institution intended to revive the old handicrafts in bookmaking. The books published under his direction are artistic, being largely handmade, and valuable editions of Shakespeare and other works have been placed on the market. *The Philistine* is a periodical published by him and devoted largely to the discussion of books and educational topics. Besides issuing a number of pamphlets and lecturing extensively, he published "Little Journeys," "A Message to Garcia," "Time and Chance," "The Man of Sorrows," "Consecrated Lives," and a series of studies of men and institutions under the title "Little Journeys."

HUBER (ü-bâr'), **François,** celebrated naturalist, born in Geneva, Switzerland, July 2, 1750; died in Lausanne, Dec. 21, 1831. Overstudy at an early age caused him to suffer with an affection of the eyes, which later resulted in total blindness. His wife, Marie Lullin, assisted him and ministered to his wants with unceasing devotion. He was thereby enabled to publish several valuable treatises on natural science, among them "Habits of Ants" and "New Observations on Bees." The latter appeared in 1792. It has gone through many editions and translations and laid the foundation of scientific knowledge of bee culture.

HUCKLEBERRY (hŭk'k'l-bĕr-rȳ), or **Whortleberry,** a small shrub native to the temperate part of the Northern Hemisphere. It belongs to the genus *Vaccium.* Many species are included in the genus, some of which are common throughout North America. They have bell-shaped flowers and berries with many seeds. They thrive best in the dry soil of woods and mountain sides and yield dark purple berries, which are used in preserves. Species called *bilberry* grow in moist and marshy places, but their fruit is less serviceable, owing to greater tartness. Most species attain a height of from one to two feet.

HUDDERSFIELD (hŭd'dẽrz-fēld), a city in the West Riding of Yorkshire, England, on the Colne River, sixteen miles southwest of Leeds. The chief buildings include the townhall, the public library, the Market hall, and the technical school. The place is noted for its manufactures of steam engines and machinery. It produces cotton, woolen and silk goods, and utensils. The city has extensive railroad connections and several lines of electric railways. The public utilities include sewerage, pavements, several parks, and a system of waterworks. It is the seat of Huddersfield College, which is affiliated with the University of London. Population, 1921, 107,825.

HUDSON (hŭd's'n), a town of Massachusetts, in Middlesex County, 27 miles west of Boston, on the Boston and Maine Railroad. It is situated on the Assabet River and is surrounded by a productive farming country. The manufactures include clothing, boots and shoes, leather, machinery, and cigars. It has a public library, electric lights, waterworks, and well-improved streets. Several school buildings and churches, a townhall, and a number of substantial business blocks are among the chief buildings. Population, 1905, 6,217; in 1925, 8,130.

HUDSON, county seat of Columbia County, New York, on the Hudson River, 28 miles below Albany. It is on the Boston and Albany, the New York Central, and other railroads. The site is on the slope of Prospect Hill. Among the chief buildings are the county courthouse, the State Armory, the State House of Refuge for Women, the city hospital, and the Hudson Orphanage Asylum. The Public Square and the Franklin Square Park are points of interest. The manufactures include steam engines, car wheels, pianos, bread, brick, cotton and woolen goods, and farming implements. It has electric street railways, electric lights, pavements, waterworks, and a sewer system. The place was settled by New Englanders in 1783, when it was known as Claverack Landing, but the present name was adopted in 1784 and it was chartered the following year. Population, 1925, 11,755.

HUDSON, Henry, distinguished navigator, born in the latter part of the 16th century, but whose history prior to 1607 is unknown. In that year he made an expedition to find a northeast passage to China. He made a second voyage in 1608, explored the coast of Greenland, and suggested for the first time the existence of an open polar sea. In 1609 he sailed in the employ of the Dutch East India Company, under whose direction he cruised along the coast of Labrador, discovered the Hudson River, which was named after him, and sailed about 150 miles up the river. His last voyage was made in 1610, when he discovered Hudson Strait and Bay and explored a portion of their coasts. Owing to a scarcity of provisions, his sailors mutinied the following year and set Hudson, his son John, and seven of the most infirm adrift in a small boat. They were never heard from again, but the survivors reached England after much suffering. Hudson published "Divers Voyages and Northern Discoveries" and "A Second Voyage."

HUDSON BAY, a large bay, or inland sea, situated in the northeastern part of North America. Its length is about 1,000 miles;

breadth, 600 miles; and area, 400,000 square miles. It is inclosed wholly by British territory, communicates with the sea through Fox Channel and Hudson Strait, and receives the drainage of a large portion of Canada. Numerous reefs and islands abound along the western shore. In the southern portion is James Bay. The streams flowing into it include the Great Whale, Churchill, East Main, Albany, Nelson, Fish, Seal, and Severn rivers. It is open to navigation about five months in the summer, and the remainder of the year its surface is covered with ice or largely obstructed by drift ice. Several harbors are situated in the southern part, where the adjoining regions are adapted to stock raising and farming. The fur trade and white whale fisheries are especially profitable, but considerable quantities of fish are also secured in the summer season.

HUDSON RIVER, an important river of New York, rises by two small streams in the Adirondack Mountains, at a height of 4,325 feet above sea level. Its course is almost due south and about 340 miles long. It flows into the Bay of New York. The Hudson is navigable a distance of 145 miles, to Albany, for the largest vessels. Beautiful falls of 50 feet are at Glens Falls, 56 miles north of Troy, where great water power has been developed by means of a dam. Its course is through regions both historical and beautiful. It was named from its discoverer, Henry Hudson. Upon it sailed the first steamboat made by Fulton. A tunnel under it connects Jersey City and New York, and it is spanned by many valuable bridges. Near its mouth are the Palisades, which rise from 300 to 500 feet above the surface of the water. Tappan Sea, about three miles wide, and Haverstraw Bay are features between the Palisades and the Highlands. About 50 miles north of New York is the West Point Military Academy, near which the historic treason of Arnold took place. The upper Hudson is noted for its precipitous banks and picturesque scenery. Albany, Yonkers, Troy, Peekskill, and Poughkeepsie are among the cities on its banks.

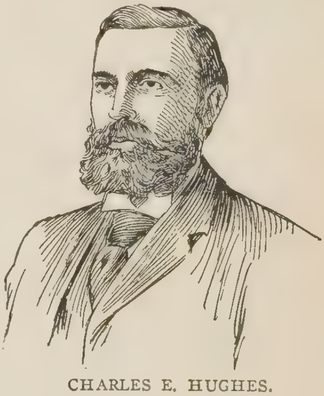
HUDSON'S BAY COMPANY, a corporation chartered by Charles II. of England in 1670, in which Prince Rupert and other noblemen were interested. The company secured sole control of the large region known as Rupert's Land, consisting of all that portion of Canada which drains into Hudson Bay. The object was to control the fur and skin trade. Later the company secured control for a like purpose of possessions extending to the Pacific, but in 1869 its rights were transferred largely to the crown in consideration of $1,500,000. However, the company reserved rights to certain ports, about 50,000 acres of land, and exclusive control of the chase in certain regions. It has still a large trade in furs and in the sale of its lands to speculators and settlers.

HUÉ (hōō-ā′), a city on the Hué River, in Anam, ten miles from the China Sea. It is the capital of Anam and is noted for its importance as a military and trade center. The French fortified it in 1801, to whom it is subject. It contains a garrison of troops and several public buildings, but the houses of the natives are inferior. The inhabitants are mostly Annamites, but include 850 Chinese and 380 Europeans. Population, 1922, 53,041.

HUE AND CRY, a phrase that originated with the Anglo-Saxons from the manner in which criminals were apprehended. If the offender could not be found, the hue and cry was raised, and all the people joined in the search until the offender was seized. For many years all persons informed of a criminal offense were by law required to raise the hue and cry, but it was abolished many years ago.

HUGH CAPET (hū kā′pĕt), King of France and founder of the Capetian dynasty, born about 939; died Oct. 24, 996. He was a son of Hugh the Great and Hedwig, a sister of Otho the Great of Germany. When a child, he inherited from his father the duchy of France and the county of Paris, thus taking rank among the most powerful princes of his country. On the death of Louis V., the last of the Carlovingian kings, he was selected by the nobles and bishops in preference to Charles of Lorraine as King of France. He was crowned at Noyon in 987 by the Archbishop of Rheims, but Charles immediately contested the election by the sword. The latter was captured and confined to a dungeon, where he died. After securing possession of the crown, Hugh associated his son Robert in the government, and the latter succeeded him as King of France.

HUGHES (hūz), **Charles Evans,** public man, born at Glens Falls, N. Y., April 11, 1862. He graduated at Brown University and Columbia Law School, and in 1884 was admitted to the bar in New York City. In 1884 he began a successful law practice, was professor of law at Cornell University Law School for some time, and after 1893 devoted his attention exclusively to active practice in New York City. He was a trustee of Brown University a number of years, served as attorney for the Armstrong legislative committee investigating life insurance frauds in 1905, and the following year was elected Governor of New York as a Republican and was reëlected in 1908. In the latter year he was prominent as a



CHARLES E. HUGHES.

candidate for President, but was defeated for the nomination by William H. Taft. In 1910 he was made a Justice of the United States Supreme Court by President Taft. He was nominated for President and was defeated in the election by President Wilson, in 1916, when he resumed the practice of law. President Harding appointed him Secretary of State in 1921, serving until 1925, when he resigned to practice law.

HUGHES, James Laughlin, educator, born near Bowmanville, Ontario, Feb. 20, 1846. He studied in the public schools and at the Toronto Normal School, and for some years was occupied on the farm of his father. In 1871 he became head master of a provincial school at Toronto, and three years later was made inspector of schools in that city. His books include "Mistakes in Teaching," "Topical History of England," "The Practical Speller," "How to Secure and Retain Attention," "Dickens as an Educator," and "Froebel's Educational Law for Teachers."

HUGHES, Sir Samuel, military leader, born at Durham, Ontario, in 1852. He spent his boyhood on a farm and at fourteen enlisted as a militiaman against the Fenians. In 1869 he graduated at the Toronto Normal School, taught school several years, and subsequently engaged in mercantile pursuits. He was elected to the Dominion parliament in 1892, was chosen minister of militia and defense in the cabinet of Sir Robert Borden, in 1911, and in 1914 undertook to organize an army to defend the mother country. He resigned from the cabinet in 1916, but remained an active supporter of military operations. He died Aug. 24, 1921.

HUGHES, Thomas, author, born in Uffington, England, Oct. 20, 1823; died in Brighton, March 22, 1896. He studied at Rugby and Oxford, was admitted to the bar in 1848, and became queen's counsel in 1869. In 1856 he published "Tom Brown's School-days," a well-known work, and one that presents a truthful picture of life at Rugby. Other publications include "Tom Brown at Oxford," "The Scouring of the White Horse," and "Life of Alfred the Great." Later he edited Lowell's "Biglow Papers."

HUGHITT, Marvin, capitalist, born in Cayuga County, New York, Aug. 9, 1837; died Jan. 6, 1928. He removed to Chicago in 1854, where he became a telegraph operator. Later he obtained a position with the Chicago and Alton and the Illinois Central railways, and subsequently held responsible positions with the Chicago, Milwaukee and Saint Paul Railway. In 1871 he was made general manager of the Pullman Palace Car Company, of which he became general superintendent the next year. He was elected president of the Chicago and Northwestern Railway in 1887.

HUGLI (hōō′glē), or **Hoogly,** an important river of British India, the principal channel of the delta of the Ganges. It is formed by the confluence of three branches of the Ganges, known as the Churni, Bhagirathi, and Jalangi, and has a length of 160 miles. At the mouth it is about fifteen miles wide and at the time of the southwest monsoon it is traversed by a bore seven feet high. Shoals obstruct the entrance of the river in many places, but ships drawing 25 feet of water may ascend as far as Calcutta. The city of Hugli, population 30,500, is located about 27 miles north of Calcutta, on the west bank of this river.

HUGO (hū′gô), **Victor Marie,** noted poet, born in Besançon, France, Feb. 26, 1802; died in Paris, May 22, 1885. His father was a general under Napoleon, and, in accord with the teachings of his mother, young Hugo became a devoted Bourbonist. He studied at Paris and Madrid, his father holding an important position in the latter city while Joseph Bonaparte was King of Spain. He began writing tragedies and poems at an early age, and in 1822 published his "Odes and Ballads." In the French Academy he secured several prizes and likewise attained a high standing at the floral games at Toulouse. His mother died about the time he came into public notice, and at his marriage soon after Louis XVIII. brightened his prospects by a liberal pension. In 1841 he was elected to the French Academy, was made a peer of France under appointment of Louis Philippe, and in 1848 became devoted to democratic tendencies in politics.

VICTOR HUGO.

Victor Hugo opposed Louis Napoleon in his ambitions, and in 1852 published his memorable philippic, "Napoleon le Petit," against him. Soon after he was banished, when he sought a refuge in Brussels, but finally settled in Jersey and the neighboring island of Guernsey, where he produced a number of interesting productions against Napoleon. While there he wrote most of the works which have made his name famous. The writings of Hugo occupy a high position in the literature of France, and, for that matter, of the world. They have gone through many translations and editions. He was the foremost man of letters of his time and gave to literature some of the most exquisite gems. He ranks highest as a poet, though his novels and dramas show much genius, and all will live on through the ages. Among his best known works are "Les Misérables," "Notre Dame of Paris," "Marie Tudor," "The Man Who Laughs," "Speeches and Addresses," "Meditations," "Les Orientales," the drama, "Hernani," "Marion Delorme," and "Letters of Victor Hugo," edited by Paul Maurice. His last novel, "Ninety-Three," was published when he was past seventy years of age.

HUGUENOTS (hū′gė-nŏts), a term which probably originated from Hugues, an obscure religious advocate, and applied to the Protestants of France during the Reformation and in the religious struggles of the 16th and 17th centuries. Among the early Protestants of France were Farel and Margaret of Valois, sister of Francis I. and Queen of Navarre. The movement was opposed by Francis I., but, when Henry II. of Germany joined the Protestant party and gave it encouragement in 1547-59, the Reformation made powerful advances in both France and Germany. In the reign of Francis II. it was headed by the Bourbon family and supported with vigor by the Queen of Navarre and the Prince of Condé. The Guises led the Catholic party. Under their leadership a fanatical persecution of the Protestants was pursued, when many were executed or banished and their property was confiscated. The events rapidly formed under which the Protestants took up arms. They named Louis I., the Prince of Bourbon-Condé, as their leader, and at a meeting in Nantes, on Feb. 1, 1560, resolved to petition the king for the removal of the Guises and the freedom of religion. It was also agreed that, if the petition be ignored, the king should be seized and Condé proclaimed regent of the realm. Shortly after the king was informed of the intention and fled to Amboise, and 1,200 Protestants were made prisoners and executed.

After the death of Francis, in 1560, it became necessary for Charles IX. and his mother, Catherine de' Medici, to curb the power of the Guises by encouraging the Protestants. Accordingly, the Guises were removed, an edict freeing the Huguenots from penalty of death was issued, and in 1562 they received the freedom of religious worship on their own estates. An attack made by adherents of the Duke of Guise on a Protestant meeting, in 1562, brought about a prolonged series of religious wars, by which France suffered great losses in life and property for many years. The Protestants were defeated at Dreux by the Duke of Guise, but he was assassinated on Feb. 18, 1563, while marching upon Condé at Orleans. The Peace of Amboise, concluded by Catherine, granted freedom of religion in many portions of France, but an alliance with Spain caused a renewal of hostilities and the execution of about 3,000 Huguenots. Condé was killed in battle at Jarnac on March 3, 1569, and shortly after Catherine began to plan the suppression of the Protestants by a general massacre. This scheme was inaugurated in 1572 by the Massacre of Saint Bartholomew, and within a few months about 30,000 Protestants were slain in France. The Protestants fled for protection to their fortified towns and carried on a defensive war with varying success until 1580, when peace was concluded.

In 1584 Henry of Navarre became heir to the throne on account of the death of the Duke of Anjou, but the Duke of Guise laid claim to the throne of France. He revived the Holy League, formed an alliance with the Pope and Spain to exterminate heresy, and inaugurated the so-called "War of the Three Henries." The Protestants secured troops from Germany and some from England, and under the leadership of Henry of Navarre presented a formidable opposition. In this conflict the Duke of Guise, Cardinal Lorraine, and the King of France were assassinated, and Henry of Navarre ascended the throne. On April 13, 1598, the famous Edict of Nantes was issued, by which the Protestants were given freedom of worship. Previous to this, in 1593 Henry of Navarre went over to the Catholic party for the purpose of maintaining himself on the throne.

In the meantime the Protestant influence continued to develop, and successive hostilities occurred in 1615, 1622, and from 1624 to 1629, when a war was waged against the Protestants by Richelieu, which ended in the latter year by the capture of the Huguenot stronghold, La Rochelle. However, the Protestants still continued to enjoy freedom of conscience under the ministry of Richelieu and Mazarin, but they were required to surrender their strongholds. Later Louis XIV. and Madame de Maintenon inaugurated a new series of persecutions, which caused many thousands to seek refuge in Germany, Switzerland, Holland, and England. Those remaining were guarded by dragoons or compelled to abjure their faith. Louis revoked the Edict of Nantes on Oct. 23, 1685, which was followed by horrible persecutions and the industry of thousands of Huguenots was carried to foreign countries. These persecutions included the annulling of marriages, the ruthless murder of women and children, the execution of preachers, and the closing of convents. Louis XV. issued an edict of suppression, though this was revoked because of general opposition. The Protestants attained equality only with the Revolution of 1789, when they secured a recognition of their political and civil rights.

The first Huguenots came to the American colonies in 1630, when they were induced to settle in the Carolinas under the charter granted to Sir Robert Heath. About the same time large numbers settled in Virginia. When the Edict of Nantes was revoked, their immigration reached its height, and large parties came to Virginia and other American colonies in 1700. They founded a settlement at Charleston, S. C., and made settlements in the middle states, particularly in New York. The industry of the Huguenots added greatly to the early development of the colonies, since they possessed superior skill, thrift, and energy. Besides engaging in agriculture, they introduced dyeing, the manufacture of woolen goods, and glass making.

HULL, a city of Quebec, capital of Wright County, on the Ottawa River, opposite the city of Ottawa. It is on the Canadian Pacific and the Pontiac Pacific railways and a number of electric railway lines. The Ottawa River is crossed by two extensive bridges, the Chaudière bridge over the Chaudière Falls and the Interprovincial, or Alexandria bridge, a short distance farther down stream at Nepean Point. Among the noteworthy buildings are the Church of the Holy Redeemer, the Notre Dame de Grâce, the Church of Saint James, the courthouse and jail, the city hall, the Notre Dame College, the Notre Dame Hall, the Scott block, the Graham block, and many public schools. It has manufactures of cement, matches, clothing, cured and packed meat, lumber products, hardware, and machinery. The municipality maintains a modern fire department, waterworks, an electric lighting plant, sewerage, and street pavements. Hull was first settled in 1800 and was incorporated in 1870. It suffered greatly by a fire in 1900, but has been rebuilt on a more substantial plan. The prosperity of the city is due to its extensive trade. Population, 1901, 13,993; in 1921, 24,117.

HULL, or **Kingston-upon-Hull,** a river port of England, in the East Riding of York, on the north bank of the estuary of the Humber, where it is joined by the Hull. The Trinity Church, the townhall, the corn exchange, and several hospitals are among the noted buildings. It is noted for its spacious docks and an extensive trade. The city has many modern improvements, such as gas and electric lights, street railways, stone and asphalt pavements, and systems of sewerage and waterworks. The manufactures include ships, steamboats, flax and cotton goods, oil, cordage, machinery, and utensils. It is noted as a commercial and educational center, has a fine public school system, and is the seat of several large churches, a public library, and Hull College. The city was chartered by Edward I. in 1299. In the Civil War it was held by the Parliamentary forces, and successfully repulsed the Royalists at two different sieges. Population, 1907, 266,792; in 1921, 278,024.

HULL, Isaac, naval officer, born in Derby, Conn., March 29, 1773; died in Philadelphia, Pa., Feb. 13, 1843. He was a nephew of William Hull, became lieutenant in 1798, and served with credit in the West Indies and in the Mediterranean. In 1806 he became captain and commanded the *Constitution* in the War of 1812, when occurred the famous encounter with the *Guerriere,* in which the latter was defeated. After this victory the *Constitution* became noted as *Old Ironsides.* Hull was granted a gold medal by Congress. Subsequently he commanded a squadron in the Pacific and in the Mediterranean, and retired in 1481.

HULL, William, general, born in Derby, Conn., June 24, 1753; died in Newton, Mass., Nov. 29, 1825. In 1775 he was admitted to the bar, joined the American army at Cambridge, and fought as captain at White Plains, Trenton, and Princeton. He led a column in the assault on Stony Point, after which, in 1779, he was promoted to the rank of lieutenant colonel. He commanded the northwestern army in the War of 1812 and with a force of 1,500 men defended Detroit. He regarded himself compelled to surrender to the British and yielded without making material resistance. For this he was tried by court-martial and sentenced to be shot, but President Madison pardoned him on account of his previous service.

HULL HOUSE, a social settlement in Chicago, situated at 335 South Halsted street. It was founded by Jane Addams and Ellen Starr in 1889, and was so named from Charles J. Hull, who occupied the site as a tenement residence and junk shop. The portion of the city surrounding the site is occupied largely by foreigners, including chiefly Jews, Italians, and French. Under wise management, the institution has been made highly beneficial, and its property includes a gymnasium, a library, a coffeehouse, and numerous buildings used in educational and industrial work. The Hull House takes rank as a leader in the social settlement movement of North America, and many of its former residents have held responsible positions in city and state offices and as inspectors and superintendents of industrial enterprises.

HUMACAO, a city in the municipality of Humacao, Porto Rico, near the eastern coast, on the Roig Road, which connects it with the harbor 6 miles distant. It has paving, electric lights, fruit packing, cigars and sugar factories, and a large local trade. It was settled about 1510. Population, 1920, 5,159.

HUMBERT (hŭm'bẽrt), **I., Emmanuel Eugene,** King of Italy, eldest son of Victor Emmanuel II., born March 14, 1844; assassinated July 29, 1900. In the war of Italian independence, in 1859, he accompanied his father, and rendered assistance in uniting the Italian states. He took the field against Austria in 1866 and was present at the Battle of Custozza. In 1868 he married his cousin, Princess Marguerite of Savoy, and on the death of his father, Jan. 9, 1878, succeeded to the throne of Italy. An attempt to assassinate him the first year of his reign failed, and he commuted the death sentence of the assassin to life imprisonment at hard labor. He exposed himself frequently by endeavoring to relieve the sufferings of the sick and dying during the cholera epidemic at Naples, and by these and other acts of kindness won the affection of his people. His administration was eminently successful. Within the period of his reign educational and industrial arts were encouraged. On July 29, 1900, while returning from a review of educational exercises, he was assassinated by an Italian who went from Paterson, N. J., for that purpose. His early death was greatly mourned by his subjects. He was succeeded on the throne by his son, Victor Emmanuel III., who was born in Naples, Nov. 11, 1869.

HUMBOLDT (hŭm′bōlt), an inland river of Nevada, rises by two forks in Elko County, and after a course of 390 miles flows into Humboldt Lake, an inland body of water in the western part of that State, about 4,000 feet above sea level. The Humboldt River is remarkable because its water contains a large per cent. of soda. It flows through an arid valley which has large tracts of sagebrush. The dry air causes the water to evaporate and become less in volume toward the mouth. The river is followed from its source to its mouth by the Western Pacific Railroad.

BARON VON HUMBOLDT.

HUMBOLDT, Friedrich Heinrich Alexander, Baron von, celebrated naturalist, born in Berlin, Germany, Sept. 14, 1769; died May 6, 1859. His father was an official to the King of Prussia and died when young Humboldt was about ten years of age. He pursued courses of study in Frankfort, Berlin, and Göttingen, and subsequently studied at the Commercial Academy in Hamburg. At Freiberg he studied mining and botany in 1791, and soon after was appointed overseer of a mine in Franconia. A scientific tour along the Rhine, which included visits to France, Belgium, Holland, and Switzerland, led to many useful discoveries, and in 1797 he resolved to make a scientific journey to the tropical zone. He sailed with Aimé Bonpland, who became his associate, in June, 1799, and the following month landed at Cumana, South America. He spent five years exploring the regions now included with Ecuador, Peru, Colombia, and Venezuela, cruised on the Orinoco and other rivers, and visited the West Indies and Mexico. In 1804 he returned to Europe, taking with him many specimens in botany, zoölogy, geology, and geography, together with copious notes in these branches and in political economy and ethnology. About twenty years were spent in preparing his great work upon the researches made in America, a publication entitled "Voyages to the Equinoxial Regions of the New Continent." While preparing this work he resided in Paris, but in 1837 settled in Berlin, where he received high recognition by the government of Prussia.

In 1829 Humboldt made an expedition to Central Asia and Siberia under Czar Nicholas, in which he explored the Ural and Altai mountains, the Caspian Sea, Chinese Dzungaria, and other points of interest. These explorations resulted in his publication, "Central Asia." Subsequently he entered the diplomatic service of Prussia, holding positions at Paris, London, Copenhagen, and other European courts. The works of Humboldt distinguish him as one of the most celebrated naturalists of the 19th century. His works are authoritative and have been translated into many modern languages. The researches made by him cover important phases of geography, electricity, meteorology, climatology, magnetism, and various departments of zoölogy and botany, such as the hibernation of crocodiles, the breathing of fishes, and the growth of tropical plants. Among the important publications not named above are "On the Irritability of the Muscular and Nervous Fibers," "Views of Nature," "Geology and Climate of Asia," "Mineralogical Observations of Basalt," and "Cosmos."

HUMBOLDT, Karl Wilhelm von, author and statesman, eldest brother of the preceding, born in Potsdam, Germany, June 22, 1767; died April 8, 1835. He studied in Berlin, Frankfort, and Göttingen, traveled extensively in France, Spain, and Switzerland, and attained to the rank of counselor of legation. In 1791 he married and settled at Jena, where he became associated with Schiller. He exercised a marked influence in the educational affairs of Prussia. He was appointed Prussian minister to Rome in 1801, where he became a generous patron of artists and men of science. After returning to his native country, he became minister of public instruction, and was instrumental in founding the University of Berlin. In 1810 he was appointed ambassador to Austria, was influential in concluding the Peace of Paris in 1814, and took a prominent part in the Congress of Vienna in 1815. He retired from active politics in 1819 and settled at Tegel, where he platted fine gardens, collected works of art by the master artists, and devoted himself to literature. His knowledge of modern and ancient languages was extensive. He was fluent in the use of the Basque tongue, several languages of the Orient, and those of the South Sea islands. His writings include "Aesthetic Essays," "On the Kawi Language of Java," "Original Inhabitants of Spain in Connection with the Basque Language," "Diversity of Language and Its Influence on the Diversity of Speech," "Additions and Corrections to Adelung's Mithridates," and "Letters to a Lady Friend."

HUME (hūm), **David,** philosopher and historian, born in Edinburgh, Scotland, April 26, 1711; died Aug. 25, 1776. Being the youngest son of the proprietor of an estate in Berwickshire, he was obliged to seek his fortune without assistance from home, except an education. His father sent him to the University of Edinburgh for the study of law, but he soon became imbued with a desire to study literature and philosophy. In 1734 he retired to France, where he spent a number of years in studious work on his "Treatise on Human Nature," a work of much merit published at London in 1739. This publication attracted little attention, compelling Hume to seek a livelihood in some other way, and he shortly after engaged as companion to an insane nobleman, Marquis of Annandale. In 1747 he became secretary to General Sinclair and accompanied him in an expedition against France, but finally became military ambassador at Vienna and Turin. In the meantime he devoted much of his time to various works on philosophy and history.

In 1752 Hume was made librarian of the Advocates' Library in Edinburgh, when he began to write his "History of England." The first volume of this work appeared in 1754. It covers the reigns of James I. and Charles I. Later he carried it back to the Norman conquest and added notes to his former work. While not a careful history of facts, the work remained a standard for many years and portions are still in public favor. In 1763 he became secretary to the ambassador to Paris, the Earl of Hertford, and was received in the literary circles of France with much enthusiasm. While there he became associated with Diderot, Rousseau, D'Alembert, and Buffon, and returned to England in 1766, accompanied by Rousseau. In 1767 he was chosen Undersecretary of State, but retired the same year to Edinburgh. Hume ranks as a writer of acute intellect and is distinguished for his marked ability in negative criticism. His writings embrace "Inquiry into the Principles of Morals," "Political Discourses," "Dialogues Concerning Natural Religion," "Inquiry Concerning the Human Understanding," and "Essays: Moral, Political, and Literary."

HUME, Fergus, novelist, born in England, July 24, 1862. He was taken to New Zealand at an early age, where he attended the high school at Dunedin and the University of Otago. Later he was admitted to the bar, resided three years in Melbourne, Victoria, and in 1888 made an extensive tour of England, Germany, France, Italy, and other countries of Europe. His writings are numerous and have been widely read. They are characterized by vividness of detail and the strong imaginative power of the author. They include "The Island of Fantasy," "Mystery of a Hansom Cab," "Aladdin in London," "The Indian Bangle," "The Crime of the Crystal," "The Golden Wang-Ho," "The Turnpike House," and "Shylock of the River."

HUMIDITY (hū-mĭd'ĭ-tў). See **Rain.**

HUMMING BIRD, the name applied to a family of small birds, so named from the sound made by their wings in flight. They are native only to America and the West Indies, and are more abundant in the tropical than in the temperate regions. Most species are very small, some not larger than a bumblebee, but all are noted for their beauty of color and plumage, their quickness in darting through the air, and the peculiar manner in which they gather the food from flowers and foliage. In taking food they never alight, but feed while hovering on the wing before a flower, supporting themselves by vibratory movement of the wings, thus producing a peculiar humming sound. Most species have a long, slender beak, either curved or straight, and a tongue which they are capable of protruding some distance in securing food. Their food consists partly of the nectar found in flowers, but they also feed on insects, and carry away flies caught in the webs of spiders. The female lays two eggs in a nest built of vegetable fibers or cotton. Both sexes display much boldness in defending their young, and with much vigor strike their enemies, usually aiming to inflict a wound in the eyes. No less than 400 species of humming birds have been described, some of which are migratory and are seen far in the north of the Temperate Zone. The *tufted-necked* humming bird of northern Brazil is the most remarkable species of these birds, and is noted for its variety of color and beautiful plumage. The only sound given out by humming birds is a chirp, with a vigor equal to that of a cricket. Their flight is so rapid as to elude the eye. The larger species are about the size of a wren.

HUMMING BIRDS.

HUMPERDINCK (hōōm'pĕr-dĭnk), **Englebert,** musical critic and composer, born near Bonn, Germany, in 1854. He studied architecture at Cologne, but soon devoted himself to music. In 1880 he formed the acquaintance of Richard Wagner and his family at Bayreuth, and that musician selected him as the instructor of his son Siegfried Wagner. His opera entitled "Hänsel and Gretel" became famous throughout the world, and may be considered a great production along the line of modern music originated by Wagner. The Mendelssohn prize was awarded to him in 1878 and two years later he received the Meirbeer prize. In 1885 he was made teacher at the Barcelona Conservatory in Spain and two years later he became instructor of music at a similar institution in Cologne.

In 1890 he became concert master at Frankfort, where he won the Mozart scholarship. He was appointed teacher of composition at the Academy of Fine Arts in Berlin in 1900. Though his music is pure and original, it somewhat resembles the Wagnerian in style. Among his chief works are "The Children of the King," "Symphony in C," "Thorn-Roses," and "The Judge of Zalamea." He died Sept. 28, 1921.

HUMPHREYS (hŭm′frĭz), **Andrew Atkinson,** soldier and engineer, born in Philadelphia, Pa., Nov. 2, 1810; died in Washington, D. C., Dec. 27, 1883. He graduated at West Point in 1831, became lieutenant of topographical engineers in 1838, and in the Civil War became major general of volunteers. He served at the battles of Fredericksburg, Chancellorsville, and Gettysburg, and was in command of a corps at the siege of Petersburg. In 1866 he was appointed chief of engineers of the United States, with the rank of brigadier general, and retired from active service in 1879.

HUNDRED (hŭn′drĕd), an ancient territorial division of England, which occupied an intermediate place between the parish or township and the shire or county. The name probably originated from a convenient grouping of one hundred families for local government. It is thought to have been a Danish institution, adopted by King Alfred about 897. The name *wapentake,* which has reference to the military side of the organization, is generally connected with the Danish occupation. The hundreds were represented in the shire mote, which, under the presidency of its bishop, sheriff, or earl, regulated the affairs of the county. In the time of Edgar the hundred became responsible for the administration of justice, and a fine or some other punishment was imposed upon it if criminals were not brought to the law.

HUNDRED DAYS, a term applied to the second reign of Napoleon I. as Emperor of France. It began on March 20, 1815, when he entered Paris after the return from Elba, and ended on June 28 of the same year, when Louis XVIII. was restored to power. Napoleon, on hearing that the restoration of the Bourbon monarchy was unpopular in France, left Elba and landed near Cannes with 900 men. Immediately the soldiers rallied to the support of their old leader, but 800,000 men were sent against him by the allies, who had pledged themselves to forever prevent Napoleon from disturbing the peace of Europe. He swore to support a liberal constitution and succeeded in raising an army of 287,000 men, but was defeated at Waterloo. He abdicated in favor of his son and gave himself up, after attempting to flee to America.

HUNDRED YEARS' WAR, the name of a long struggle between England and France, in which the English kings sought to obtain the territory and crown of the French kings. It began in 1337 and continued with several intermissions until 1453. Edward III. of England, who was a son of a sister of Charles IV. of France, claimed the crown of that country. War was declared in 1337, but the early contests were those of diplomacy rather than of arms, and in 1346 the English gained a substantial victory at Crecy, after which Calais became an English possession. The French were again defeated at Poitiers in 1356, where the leadership of the Black Prince was a potent factor in obtaining victory for the English. In 1360 a short intermission was secured by the Peace of Bretigny, but when Charles V. ascended the throne of France he had the help of Du Guesclin in regaining the lands lost by his predecessor. He was succeeded by Charles VI. in 1380, when few possessions were left to the English in France, and a truce for 28 years was signed in 1396. War broke out again in 1415, owing largely to the Civil War in France, hence the English under Henry V. found comparatively little resistance. The latter compelled Charles VI., in the Treaty of Troyes, to recognize him as his heir and the regent of France. At that time the English were in possession of nearly the whole of France, but in 1429, through the achievements of Joan of Arc, the French were victorious on every hand. When the war closed, in 1453, the English held no territory except the city of Calais and a small district adjoining, and this was regained by the French in 1558.

HUNGARY (hŭn̲′gȧ-rĭ), a political division of Europe, formerly the eastern part of the monarchy of Austria-Hungary. It has an area of 35,654 square miles, and comprised, besides Hungary proper, Croatia, Slavonia, and Transylvania. In 1922 it had a population of 7,890,868. The surface is well adapted to agriculture, which is the principal industry. It may be regarded a natural basin around which extend mountain chains, except on the south, where the valley of the Danube stretches into Servia. The Theiss, Danube, and Drave, with their tributaries, form the drainage, practically all of which is by the Danube into the Black Sea. Two lakes, the Balaton Lake and the Neusiedler Sea, are situated between the Drave and Danube, and form the principal lake basins. They have a depth of about forty feet and include extensive marshes, but the water evaporates from the latter in dry seasons.

The productions, climate, and general industries of Hungary are practically the same as those of Austria. Hungary is exceedingly rich in minerals, forests, soil products, and internal improvements. The canals and navigable rivers have a length of 2,150 miles, while railroad lines penetrate all portions of the country, the different lines including about 4,500 miles. Among the minerals are iron, lead, copper, cobalt, salt, gold, silver, coal, petroleum, zinc, antimony, and peat. The soil products consist of wheat, cotton, tobacco, hay, barley, rye, a large variety of fruits, and many valuable forest products. Stock raising, dairying, and manufacturing are of growing importance. About 35 per cent. of the adult inhabitants are illiterate, but schools and colleges are maintained under government grants, and school attendance is compulsory. The religious affiliations are diversified greatly, as also are the races represented in the various portions. Among the numerically strongest sects are the Roman Catholics, Lutherans, Calvinists, Greek Catholics, Arminians, Unitarians, and Israelites. All forms of worship are free and marked liberalism is shown in the treatment of all classes. The races most numerous are Hungarians, Germans, Servians, Croatians, Bohemians, Moravians, Slovaks, and Jews. However, the Hungarians constitute about one-half of the inhabitants.

History. The Hungarians, or Magyars, are an Asiatic people of the Turanian race and are allied to the Finns and Turks. Formerly they occupied a large district in southern Russia adjacent to the Caspian Sea, but under their leader, Arpad, they crossed the Carpathians in 889 and established a foothold in the plain of the Danube. Subsequently they conquered the regions now occupied by Transylvania and Hungary and made incursions into Germany and France. Otho I. of Germany defeated them with great slaughter, after which they became less warlike and developed agriculture and civilized arts. They established a kingdom in the latter part of the 10th century. In 997 Steven I. became their king, ruling until 1030. During his time the Hungarians embraced Christianity, established churches, founded cities, developed the arts of peace and laid the foundation for their present power. Stephen was made a saint by Pope Sylvester II. and was given the title of Apostolic King. During the reign of succeeding kings the boundary line was extended. Croatia and Slavonia were added in 1089 by King Ladislaus and Dalmatia was annexed in 1102 by King Coloman.

In 1222 the nobles secured from Andrew II. the Golden Bull, the so-called Magna Charta of Hungary, by which the civil rights were defined. Andrew III. was the last of the house of Arpad, died in 1301, and was succeeded by Charles Robert of Anjou in 1309. During his reign Hungary became one of the greatest military powers of Central Europe. In 1342 Louis I. became king. In his reign of forty years he annexed Red Russia, Moldavia, Poland, and a part of Servia. Sigismund, who ascended the throne in 1387, was elected Emperor of Germany. His reign became famous for the wars with the Turks and the Hussites. He established an academy at Buda and secured various reforms. Matthias Corvinus became king in 1458, founded a university at Pressburg, defended the country against the Turks, and added territory to his dominion. The next sovereign of note was Ladislaus II., who reigned from 1490 to 1516, and was succeeded by Louis II., reigning until 1526. While the last two sovereigns occupied the throne the country was disturbed by domestic troubles and incursions of the Turks. At Mohács the Hungarian army was defeated by Soliman the Great and 30,000 people were carried into slavery. A large portion of the Hungarian provinces remained under Turkish dominion for 160 years. Ferdinand of Austria, a brother-in-law of Louis II., subsequent to the death of the latter entered upon a conquest of Hungary. After a dispute between him and John Zápolya, of Transylvania, the Protestants sided with Ferdinand and the house of Hapsburg obtained control of Hungary. In 1687 Leopold I. forced the Hungarians to declare the crown of Hungary forever hereditary in the house of Hapsburg.

Francis Rákóczy induced the Hungarians to rebel against Austria in 1703, but the effort proved futile. Charles VI. succeeded in gaining the approval of the Hungarians by granting reforms and adopting the Pragmatic Sanction, under which Maria Theresa eventually became ruler. Both Germany and France disputed her claim, but the invaders were repelled by the Hungarians. The queen showed her gratitude by granting religious freedom, building schools, and encouraging agriculture. Joseph II., son of Maria Theresa, governed Hungary without regard for its constitution, but, when Francis I. succeeded him, the Hungarians gave the latter valuable support in money and troops to defend the Hungarian constitution against the claims of Napoleon. Later he imposed exorbitant taxes, but in 1825 a diet was summoned to devise reforms, which discontinued the Latin language in public debates and adopted the Magyar. The diets of 1830 and 1832 again raised questions regarding absolute religious views, popular suffrage, and the rights of the common people, in which such men as Francis Deak and Louis Kossuth were prominent factors. These patriots were first imprisoned, but, when the French Revolution of 1848 gained strength, it gave an impulse to the demands for greater rights and equality to the people of Hungary, and soon after many concessions were granted by the court of Vienna.

Kossuth published the first Hungarian daily newspaper and spread the doctrine of human rights broadcast in the land, advocating equal taxes for all, freedom of speech and the press, and equality in citizenship. The government began to operate secretly against these demands, but the Austrians who were also clamoring for reforms, encouraged a revolt of the Croats and Wallachians, inducing them to invade Hungary. An Austrian army sought to suppress the revolution, but after a number of battles the successes were on the side of the Hungarians, and Austria was obliged to enlist aid from the Russians. After struggling for some time, the Hungarians were obliged to surrender, and many of the rebellious statesmen and soldiers were executed. The Battle of Sadowa, in 1866, brought about a separation between Austria and Germany, and the demands of Hungary were now heeded by the granting of a constitution. In 1867 Francis Joseph became King of Hungary and was succeeded, in 1916, by Charles I., who abdicated in 1918.

In 1914 it gave loyal support to the Central Powers and took an active part in the campaigns in Russia, Italy and Rumania. On the death of Francis Joseph, in 1916, Charles IV. became the emperor-king. At the close of the war it was deprived of much territory by the Paris Peace Congress, including Croatia, Slavonia and Transylvania, and the government organized as a constitutional republic. Debreczen and Maria Theresiopel are flourishing cities. Budapest is the capital and largest city. See page 666, in the last volume of these reference books.

HUNGERFORD, Margaret Wolfe, novelist, born at Ross, Ireland, in 1855; died Jan. 24, 1897. She was a daughter of Fitzjohn Stannus Hamilton, who served as rector of the cathedral at Ross, and is quite well known by the pseudonym of the *Duchess*. In 1877 she began to write short stories and novels. Among the chief writings are "A Maiden All Forlorn," "Molly Bawn," "Beauty's Daughters," "A Mental Struggle," "Phyllis," and "Undercurrents."

HUNS, a Turanian race of nomadic and warlike people, who, prior to the Christian era, were confined to Asia. They had a yellow complexion, a low and strong structure, a flat nose, and eyes deeply sunken in the head. To prevent the growth of the beard they scarred their faces with lashes and consequently possessed a peculiar ugliness. In habits they were roving, built no houses or cities, clad themselves in skins, and were noted for excellent horsemanship. Their families and all their possessions were carried in huge wagons, and their means of subsistence was secured largely from the chase and rude agriculture.

The Huns organized a powerful state in Mongolia. In the year 200 B. C. they overran the Chinese Empire, and after consecutive defeats compelled the Chinese Emperor, Kao-ti, to make a treaty. In the reign of Vou-ti, about the year 80 B. C., they were defeated by the Chinese, and subsequently large waves of emigrants began to move westward in search of possessions in the vicinity of the Caspian Sea. They settled between the Ural and Volga rivers. About 372 A. D. many Huns crossed the Volga, conquered the Alani and the Ostrogoths, and caused the Visigoths to emigrate and settle west and south of the Danube. Successive waves of immigrants followed each other until the former possessions of the Goths became a stronghold of the Huns, and their powerful chief, Rugias, in 432, secured from Theodosius II., Emperor of Byzantium, valuable tributes and territorial possessions.

Their greatest warrior was Attila, who called himself the scourge of God. He gathered a half million savages, with whom he moved westward from his wooden palace in Hungary, and vowed that he would not stop until he reached the sea. The army of Theodosius was beaten in three battles and Macedonia, Thrace, and Greece were completely overrun by the Huns. Subsequently Attila conducted a campaign against the Germans on the Rhine and proceeded into France. On the field of Chalons, in 451, the Huns were defeated by Aëtius, the Roman general in Gaul, and Theodoric, King of the Goths, and Europe was saved to Christianity and Aryan civilization. Attila next crossed the Alps and descended into Italy, where city after city was taken. While marching upon the city of Rome, he was met by Pope Leo I., and by his majestic mien and exemplary character inspired Attila to spare the city. The death of Attila and the defeat at Chalons were heavy blows against the Huns. Later they were defeated in successive battles by the Goths and other Germanic tribes. This not only scattered their forces, but required them to remain principally on the east side of the Danube.

HUNT, Helen. See **Jackson, Helen Fiske.**

HUNT, James Henry Leigh, poet and essayist, born in London, England, Oct. 19, 1784; died in Highgate, Aug. 28, 1859. He studied at Christ's Hospital, London, took a course of reading in a law office, and for four years held a position in the war office. In 1809 he formed a partnership with his brother John to found the *Examiner*, a newspaper devoted to liberalism in politics. A libel suit was instituted against him for calling the prince regent a "corpulent Adonis of fifty," and in 1813 he was sentenced to a fine of $2,500 and imprisonment at Surrey jail for two years. While in confinement he remained busy and received visits from such distinguished men as Byron, Keats, and Shelley. After his release he again settled in London, and there busied himself in literary work. His poems and essays are among the best, being characterized by the cheerful and fanciful. An extended visit to Italy was fruitful in that it brought many new thoughts and literary touches into English productions, all of which he twined gracefully with the brighter side of life. His best known works include "Lord Byron and His Contemporaries," "Imagination and Fancy," "Stories of the Italian Poets," "Religion of the Heart," "Men, Women, and Books," "Old Court Suburb," "Story of Rimini," "Table Talk," and "Wit and Humor." He wrote the lives of Congreve and Farquhar and published sketches of Shelley and Keats. Parliament granted him a pension of $1,000.

HUNT, Mary Hannah, teacher and reformer, born at South Canaan, Conn., July 4, 1830; died April 24, 1906. She studied at Patapsco Institute, near Baltimore, Md., and became teacher of chemistry and physiology in that institution. In 1852 she married L. B. Hunt and removed to Massachusetts, where she conducted experiments and investigations of the effect of narcotics and alcoholic drinks upon the human system. Soon after she began to advocate scientific temperance instruction for the schools, and through her efforts compulsory laws requiring such instruction were enacted in Canada, the United States, Chile, and other countries. In 1897 she attended the International Anti-Alcoholic Congress at Brussels, which had been convened under the auspices of the King of Belgium, and in 1903 was a delegate to a similar convention at Bremen, Germany. She was superintendent for some time of the department of scientific temperance instruction for the World's Women's Christian Temperance Union and a life director of the National Educational Association of the United States. Her publications consist largely of essays and reports. She founded and edited a monthly magazine called the *School Physiology*.

HUNT, Richard Morris, architect, born at Brattleboro, Vt., Oct. 28, 1828; died July 31, 1895. He was a brother of William Morris Hunt (q. v.), studied architecture in Geneva, Switzerland, and in Paris, France, and traveled extensively in Africa and Asia. In 1855 he returned to the United States, after which time he built many fine residences in Newport, Boston, and New York. Among the principal buildings designed by him are the Lenox Library, the Naval Observatory at Washington, the Divinity College building at Yale, the *Tribune* building in New York, the country home of George Vanderbilt at Biltmore, N. C., the Administration building at the Columbian Exposition in Chicago, and the extension of the National Capitol in Washington. He was honored by membership in many scientific associations and was made a chevalier of the Legion of Honor.

HUNT, William Holman, painter, born in London, England, in April, 1827. He studied at the Royal Academy and in 1846 was admitted to its membership. In 1848 he became associated with Dante Gabriel Rossetti. The two were joined by several other young painters in establishing the Pre-Raphaelite Brotherhood, a movement designed to avoid vivid and excessive imaginative treatment of subjects, aiming to secure greater trueness to nature. He visited Palestine in 1854 for the purpose of studying life in the East, and while there secured a series of pictures illustrating incidents in Bible history, which he touched with the finer scenery of the Holy Land. In 1876 a number of his productions were exhibited at the Centennial Exposition, where they attracted general attention. Hunt produced many exquisite works of art, a number of which are masterpieces. They include "The Flight of Madeline and Porphyro," "Rienzi Vowing to Avenge the Death of His Brother," "Light of the World," "Awakened Conscience," "The Scapegoat," "Triumph of the Innocents," "Finding of the Savior in the Temple," "The Flight into Egypt," "Dante Gabriel Rossetti," and "Isabella and the Pot of Basil." He died Sept. 7, 1910.

HUNT, William Morris, painter, born at Brattleboro, Vt., Mar. 31, 1824; died Sept. 8, 1879. He studied at Harvard College, but left that institution before graduating, and subsequently attended the Düsseldorf Academy, Germany. Afterward he studied painting in Paris, where he became a friend of Millet, with whom he painted in the forests of Fontainebleau. In 1855 he returned to the United States and settled at Newport, R. I., but subsequently removed to Boston, where he worked and taught as an artist. He exercised considerable influence upon art in the United States and produced a number of works that are praised for their coloring and artistic qualities. They include "The Flight of Night," "The Prodigal Son," "Newton Lower Falls," "Dead in the Snow," "Girl with the Kitten," "Peasant Girl at Barbizon," "Head of a Jewess," and "The Farmers' Return."

HUNTER (hŭn'tẽr), **David,** soldier, born in Washington, D. C., July 21, 1802; died there Feb. 2, 1886. In 1822 he graduated at West Point, became captain of dragoons in 1833. and twice crossed the Rocky Mountains while on frontier duty. In the Mexican War he was paymaster in the command of General Wood, and in 1861 accompanied Lincoln while proceeding to Washington to be inaugurated. Shortly after he entered the Union army, commanded a division at Bull Run, and the following year became major general of volunteers. About this time he organized a volunteer regiment of fugitive slaves, one of the first black troops in the national service, which induced Jefferson Davis to proclaim him an outlaw. In 1864 he commanded the department of West Virginia, defeated the Confederates at Piedmont, and subsequently served on the commission which tried the conspirators implicated in the assassination of Lincoln. He retired from active service in 1866.

HUNTER, John, surgeon and physiologist, born at Glasgow, Scotland, July 14, 1728; died October 16, 1793. He obtained a common school education, was apprenticed to a cabinetmaker, and subsequently studied medicine and surgery at Saint Bartholomew's Hospital. Later he studied at Oxford and in 1761 joined the army as staff surgeon. Two years afterward he began to practice surgery in London, where he became noted as a successful anatomist and one of the fathers of zoölogical science. His library was purchased by the British government and presented to the Royal College of Surgeons. Among his books are "A Treatise on the Venereal Disease," "Observations on Certain Parts of the Animal Anatomy," "Natural History of the Human Teeth," and "A Treatise on the Blood, Inflammation, and Gunshot Wounds."

HUNTER, Robert Mercer Taliaferro, public man, born in Essex County, Virginia, April

21, 1809; died July 8, 1887. He graduated at the University of Virginia, studied law, and began a successful practice. In 1833 he was elected a member of the State Legislature and three years later became a member of Congress, being elected as a Democrat. He was Speaker of the House in 1839 and in 1847 became a member of the United States Senate, where he was prominent as an advocate of states' rights. In 1861, after the secession of Virginia, he withdrew from the United States Senate, and the following year was Secretary of State in the Confederate Cabinet. He was chosen a Senator of the Confederate States in 1862, serving throughout the war, and in 1874-80 he was treasurer of the State of Virginia. In the Confederate Congress he was an opponent of the policy of Jefferson Davis and in 1865 took part in the Hampton Roads conference.

HUNTING. See **Game.**

HUNTINGDON (hŭn'ting-dŭn), a borough and the county seat of Huntingdon County, Pennsylvania, on the Juniata River, 98 miles west of Harrisburg. It is on the Pennsylvania Railroad. Among the chief buildings are the county courthouse, the high school, and several fine churches. It is the seat of Juniata College and of the State Industrial Reformatory. The surrounding country has extensive deposits of iron, lead, coal, and building stone. Among the manufactures are railroad cars, flour, ironware, cigars, and machinery. It was settled in 1760 and incorporated in 1796. Population, 1900, 6,053; in 1920, 7,051.

HUNTINGTON, a city in Indiana, county seat of Huntington County, on the Little River, 24 miles southwest of Fort Wayne. It is on the Erie and the Wabash railroads. The noteworthy buildings include the high school, the public library of 12,500 volumes, and a United Brethren College. The surrounding country is agricultural and produces the famous Huntington white lime. The general facilities include waterworks, electric railways and lights, and good public schools. Among the manufactures are woolen goods, cigars, flour, shoes, bicycles, stoves, and ironware. It is the seat of important railroad shops. The place was settled in 1834 and incorporated in 1848. Population, 1900, 9,491; in 1920, 14,000.

HUNTINGTON, a town of New York, in Suffolk County, thirty miles northeast of New York City. It is located on Long Island Sound and on the Long Island Railroad, has extensive bus facilities, and is surrounded by a fertile farming district. The manufactures include pottery, machinery, brick, clothing, and cigars. It is popular as a residential center and as a summer resort. The public library has about 15,000 volumes. In the town is a monument to commemorate the spot where Nathan Hale was captured by the British. Population, 1905, 10,236; in 1920, 13,893.

HUNTINGTON, a city of West Virginia, county seat of Cabell County, on the Ohio River, 52 miles west of Charleston. It is on the Chesapeake and Ohio, the Baltimore and Ohio, and other railroads. The surrounding country is fertile and produces large quantities of iron, coal, salt, fruits, and lumber products. Among the chief buildings are the county courthouse, the high school, the Carnegie Library, Marshall College, and the West Virginia Asylum for the Insane. The enterprises include woolen and flouring mills, car and broom factories, iron works, tobacco factories, and railroad machine shops. Electric street railways, pavements, public lighting, and waterworks are among the municipal facilities. Huntington was settled and incorporated in 1871. Population, 1900, 11,923; in 1920, 50,177.

HUNTINGTON, Daniel, painter, born in New York, Oct. 14, 1816; died April 18, 1906. He studied at the National Academy of Design under Prof. S. F. B. Morse and in 1839 at Florence, Italy, where he produced a number of excellent pictures. He visited Europe in 1851 and again in 1882, and served as president of the National Academy most of the time from 1862 to 1891. His portraits include those of Presidents Van Buren and Lincoln, William Cullen Bryant, and Louis Agassiz. Other noted productions are "The Bar-Room Politician," "The Florentine Girl," "Lady Washington's Reception Day," and "Queen Mary Signing the Death Warrant of Lady Jane Grey."

HUNTINGTON, Frederick Dan, theologian, born in Hadley, Mass., May 28, 1819; died July 11, 1904. He graduated at Amherst College in 1839, studied at Cambridge Divinity School, and became a Unitarian pastor at Boston. In 1855 he was made professor of Christian morals at Harvard University, and in 1860 took orders in the Episcopal Church. He became rector of Emmanuel Church in Boston in 1864 and five years later was chosen bishop of central New York. Besides promoting the establishment of the *Church Monthly*, he published "Lessons on the Parables," "Christian Believing and Living," and many pamphlets and magazine articles.

HUNTSVILLE, a city in Alabama, county seat of Madison County, called "Queen City of the Mountains." It is on the Nashville, Chattanooga and Saint Louis and the Southern railroads, and is beautifully situated on a spur of the Cumberland Mountains. The surrounding country is agricultural, dairying, and fruit raising. It is the seat of the Huntsville College and the State Normal and Industrial School. It has a fine hospital, a Y. M. C. A. building, and many churches. Other noteworthy buildings are the high school and the county courthouse. The manufactures include railroad machinery, farming implements, ironware, cotton, cotton-seed oil, ice, and lumber products. Gas and electric lights, waterworks, and a public library are among the facilities. It was settled in 1775 and incorporated in 1800. Population, 1900, 8,068; in 1920, 8,018.

HUNYADY (hōōn'yŏd-ē), **János,** military hero of Hungary, born near the close of the 14th century; died in 1456. In 1442 he liberated Transylvania from Turkish rule, which he followed up by conducting expeditions south of the Danube. In 1456 he captured Belgrade.

HURLEY, Edward Nash, public man, born in Galesburg, Ill., July 31, 1864. He developed the pneumatic tool industry and served as trade commissioner in South America. In 1917 he became chairman of the U. S. Shipping Board.

HURON, a city of South Dakota, county seat of Beadle County, 120 miles east of Pierre, on the Great Northern and the Chicago and Northwestern railroads. The features include Huron College, the public high and junior high schools, grain elevators, and wholesaling houses. Many highways center here. It is growing in wealth and industry. Population, 1925, 10,204.

HURON (hū'rŭn), **Lake,** one of the five Great Lakes of North America, located between the State of Michigan on the west and the Province of Ontario on the east and south. It joins lakes Superior and Michigan on the north and Lake Erie on the south. The length is 256 miles; the width, 190 miles; and the area, 22,322 square miles. It is from 200 to 700 feet deep and its surface is 582 feet above the sea. Within the lake are about 3,000 islands, of which Grand Manitoulin is the largest. The bays are Saginaw and Thunder on the west and Georgian on the east, though there are numerous others of less importance. The water is pure and clear. Many valuable species of fish abound. Good harbors are plentiful, including those at Bay City, Port Huron, and Cheboygan, Mich.; and Collingwood, Kincardine and Goderich, Ontario. The most important streams flowing into it include the Saginaw and Au Sable rivers. Lake Huron receives the discharge from Lake Superior through the Saint Mary's River, and is connected with Lake Michigan by the Strait of Mackinaw. It discharges into Lake Erie through the Saint Clair River, Lake Saint Clair, and the Detroit River.

HURON INDIANS, a tribe of North American Indians, which formerly occupied the lake region of Ontario. They were classed with the Huron-Iroquois family. Among the Indians they were generally spoken of as the Wyandottes and they have been known by that name since 1751, but they were designated as Hurons throughout the early colonial times. They were frequently at war with the more powerful Iroquois, for which purpose they became allied with the Algonquins at different periods, but by the middle of the 17th century were driven westward to the vicinity of Lake Superior. In 1632 the Jesuits started missions among them, and by 1670 they had caused most of the tribe to settle in the vicinity of Mackinaw. The operation of these missionaries induced many to embrace the Catholic religion and to learn the French language. Subsequently some of them drifted into territory which is now occupied by the United States. In 1812 they aided the British and in 1832 a reservation was formed on the present site of Kansas City, Kan., which was known as the Wyandotte. Subsequently the larger part of the tribe was settled on the Quapaw reservation, where it numbers about 300. The Hurons remaining in Ontario, Canada, occupy a region near Quebec, where they have been intermixed largely with the French. Many have adopted civilized arts and are advanced in education.

HURRICANE (hŭr'rĭ-kān). See **Storms.**

HURST (hûrst) **John Fletcher,** bishop, born near Salem, Md., Aug. 17, 1834; died May 4, 1903. After attending the universities of Halle and Heidelberg, Germany, he returned to America, and in 1858 became pastor of Methodist churches at Passaic and Elizabeth, N. J. In 1866 he took charge of the Methodist institute at Bremen, Germany, and returned to the United States in 1871, when he became professor of historical theology in the Drew Seminary in Madison, N. J., and was made president of that institution in 1873. The general conference at Cincinnati in 1880 elected him bishop. As a pulpit orator and lecturer he stands preëminent. He was made chancellor of the American University at Washington, D. C., in 1891. His publications include "Life and Literature of Germany," "History of the Christian Church," "History of Rationalism," "Outlines of Bible History," "History of the Reformation," and "The Country and People of India and Ceylon."

HUSBAND AND WIFE, the two parties to a marriage contract, after the same has been suitably ratified through solemnization by a minister or a civil officer empowered to perform that act. The laws which govern the marital relation are among the most important of those which prevail in any community. Though they have been looked upon in this respect from remote antiquity, many marked changes have taken place within the last two centuries in the legal relations existing between husband and wife. The common law of England formerly regarded the person of the wife as merged in that of the husband, and all of her property rights were transferred to him at the time of marriage. This law did not give to woman that place and those rights which place her on an equality with the husband, and since then many changes have taken place in the equity of England as well as in the statute law of America. At present the marriage relations between husband and wife may be said to be those of practical equity, and they are governed by the laws enacted in the State or Province. Since equity and statute law differ somewhat in the various states and as there is no national law governing marriage relations, it is impossible to give more than a general outline of the more important common law rules in the scope of this article.

Since the residence of the husband is that of the wife, it being her duty to reside with him, the husband has the right to determine the residence of the family. He is required to support the wife according to his ability and income, and she is obligated to furnish reasonable and necessary domestic service. In some states the husband is liable for debts contracted by the wife before marriage, but generally neither husband nor wife is liable for the debts or liabilities of the other incurred before marriage. At common law, when a man married a woman, he became liable for all the debts she owed when married, but she was not competent in law to contract a debt in her own name after marriage. At present she may purchase necessaries for the home, such as clothing, articles of food, and essentials in furthering the reasonable educational advancement of the family, but in general the wife does not possess the power to make contracts, this right being vested in the husband.

Previous to a marriage the parties may make agreements between themselves about their separate properties, and, if these are not unreasonable or against the policy of the law, they will be enforced after marriage. In the absence of such a contract, neither the husband nor wife can dispose of real property without the consent of the other, since the right of dower is attained at the time of marriage in the absence of a contract. Under the common law neither the husband nor wife could sue the other, except for separation or divorce, but now the law of most countries permits either party to sue for the recovery of property or in equity for other rights. However, neither is a competent witness against the other, except in actions at law where one of the parties sues for protection against the other. The presumption of the husband's influence over the wife still exists to the extent that, if she commits a crime in his presence, she is punishable for it if it is shown that she did it of her own free will. While married women have been emancipated from many of the disabilities imposed upon them by the common law, the statutes and courts still recognize the husband as the head of the family.

HUSS, John, religious reformer of Bohemia, born in Husinetz, Bohemia, in 1370; suffered martyrdom July 6, 1415. After studying in his native town, he took an extended course at the University of Prague, where he received a degree in 1393. He commenced to lecture on theology and philosophy in 1398. As early as 1391 he began the study of Wycliffe's writings, which made a deep impression upon him, and after beginning to preach he denounced with vigor auricular confession, papal indulgencies, and masses for the dead. In this course he was violently opposed by the monks and clergy, and in 1410 Archbishop Sbynko burned 200 volumes of the writings of Wycliffe, and on complaint had Pope Alexander V. summon Huss to Rome.

In 1412 Huss opposed with much deliberation a bull of indulgence published by Pope John XXIII., and, when that potentate summoned him to appear at Rome, Huss refused to comply and was excommunicated. However, he continued his opposition by boldly writing and lecturing against the practices of the church, in which he was aided greatly by the people of Prague, through whose influence he was relieved from excommunication, but was again interdicted in 1413. From this he appealed to a general council and to Christ, and in a book entitled "On the Church" he condemned papal abuses and denied the unconditional supremacy of the pontiff. The nobles and common people gave him vigorous support, and he was provided with a safe conduct by Emperor Sigismund while attending the general council at Constance. On November 3 he reached Constance and on the 28th of that month was imprisoned in a cathedral, and later in the Castle of Gottleben, in spite of the protest of the Polish and Bohemian nobles.

A formal trial of the case against Huss for alleged heresy was commenced on June 5, 1415, but it was conducted with little regard for equity, and on the 6th of July 39 charges were placed against him, some of which he denied, but others he admitted as embracing his doctrine. Refusing to recant alleged errors until error should be proven, he was condemned to be burned at the stake. He suffered martyrdom the same day and his ashes were consigned to the Rhine. The life of Huss stands as one of the noble examples of devotion to freedom in religious thought. His writings, though devoted wholly to a discussion of questions pertaining to the church and state, had a lasting influence on the life and literature of Bohemia.

HUSSITES (hŭs'īts), a powerful organization that honored John Huss and Jerome of Prague as martyrs, and after the death of the former took up arms in defense of their religious principles. Under the leadership of Johann Ziska they captured Prague and successfully opposed Emperor Sigismund, whom they charged with breaking his pledge in furnishing safe conduct to Huss. There were two parties among the Hussites, known as the Calixtines and Taborites. The former comprised the so-called moderate Hussites, who, later, by the compact of Prague, in 1433, united with the Catholics. During the union of both branches the priests and monks were punished excessively, but when they became separated a weakness appeared and the Taborites were defeated in a battle at Bömischbrod on May 31, 1434. Subsequently their political influence declined and for religious purposes they became united with the Bohemian Brethren.

HUTCHINSON (hŭch'ĭn-sŭn), a city in Kansas, county seat of Reno County, on the Arkansas River, 225 miles southwest of Kansas City, on the Missouri Pacific, the Chicago, Rock Island and Pacific and the Atchison, Topeka and Santa Fé railroads. In its vicinity are vast beds of pure rock salt, which are worked extensively. The chief buildings include the county courthouse, the high school, and the public library. It is the seat of the State reformatory, has many beautiful residences, and is a center of trade in merchandise. The municipal facilities embrace electric lights, waterworks, a sewerage system, and a street railway. It has manufactures of matches, creamery butter, ironware, flour, salt, cigars, and machinery. It was settled in 1872 and incorporated in 1874. Population, 1925, 25,970.

HUTCHINSON, Anne, religious enthusiast, born in Alford, England, in 1591; died near New Amsterdam (now New York City), in August, 1643. She and her husband came to America in 1634, settling in Boston, Mass. Her peculiar religious views and severe denunciation of the Massachusetts clergy in public lectures caused her to be tried for heresy and banished from Massachusetts. Shortly after she bought the island of Aquidneck from the Narragansett Indians and founded Portsmouth. Her husband died in 1642, when she settled in Connecticut, and the following year she and her family were massacred by the Indians.

HUTCHINSON, Thomas, royal Governor of Massachusetts, born at Boston, Mass., Sept. 9, 1711; died June 3, 1780. He graduated at Harvard University, studied law, and established a successful practice at Boston. After serving a term of years in the General Assembly, he was made Lieutenant Governor, became Chief Justice, and in 1771 was commissioned Governor of Massachusetts. He was unpopular among those who advocated independence, since he supported all the measures of the British ministry with unswerving loyalty. The Americans made two attacks upon his house during the Stamp Act riots of 1765, in the last of which much of his furniture and many books were lost or destroyed. In 1774, after becoming wearied with the conflict during the stormy times preceding the Revolution, he sailed to England, where he was granted a pension for valuable service to the crown. He was accomplished as a scholar and writer and is the author of "History of the Province of Massachusetts Bay," a valuable history of colonial times in three volumes.

HUTTON (hŭt't'n), **Laurence,** author, born in New York City, Aug. 8, 1843; died at Princeton, N. J., June 10, 1904. He secured a good education in New York and traveled abroad. In the meantime he began contributing to newspapers and periodicals, among them the New York *Evening Mail* and *Harper's Magazine.* His writings embrace "Literary Landmarks of Jerusalem," "Artists of the Nineteenth Century," "Portraits in Plaster," and "Other Times and Other Seasons." His "Literary Landmarks" is a group of delightful guide books of a number of cities in Europe.

HUXLEY (hŭks'lĭ), **Thomas Henry,** naturalist and philosopher, born in Ealing, England, May 4, 1825; died in Eastbourne, June 29, 1895. His early education was under his father and included a wide range of reading and self-study. Later he studied three years at Charing Cross Medical School and in 1845 received a degree from the University of London. About the same time he became assistant surgeon on the ship *Rattlesnake,* spent four years exploring in the South Pacific, and at the same time investigated natural phenomena. While on this voyage he visited New Guinea, Australia, and other portions of Australasia. In 1851 his ability was recognized by an appointment as fellow of the Royal Society, and in 1854 he became professor of physiology in the Royal Institute. When Darwin's "Origin of Species" appeared, in 1859, he became an advocate of the doctrine of organic evolution. In 1869 he was made president of the Geological Society. The following year he accepted a like position in the Ethnological Society, and was similarly recognized by a number of other organizations, becoming president of the Royal Society in 1885.

THOMAS H. HUXLEY.

The researches of Huxley were devoted to many lines of scientific investigation and his lectures and writings give him a reputation for much argumentative vigor and profound knowledge. Haeckel wrote of him as the most eminent English zoölogist. His writings include "Affinity of Oceanic Hydrozoa," "Anatomy of Vertebrated Animals," "Anatomy of Invertebrated Animals," "Physical Basis of Life," "Man's Place in Nature," "Introduction to Zoölogy," and "Science and Culture." His celebrated discussions regarding theology with Gladstone, the Duke of Argyll, and others have given to the world a number of helpful treatises. He defined an agnostic as one who refuses to adopt a statement which is not susceptible of scientific proof, and his "Physical Basis of Life" proves that he was not an absolute materialist.

HUYSMANS (üs-män'), **Joris Karl,** novelist, born in Paris, France, Feb. 5, 1848; died May 12, 1907. He descended from a Flemish family, of which some members were painters, and began a literary life at an early age, notwithstanding that he had studied law and held a position in the department of the interior. His early writings consist largely of short stories, some of which are written in a vein of materialism. At one time he retreated from the public and became a member of the Benedictine community at Solesmes, but soon left there and took up literature with even a greater ardor than before. It was said of him that he was "Too much of a man of letters to be a monk, and too much of a monk to stay among men of letters." His principal writings include "En route," "Un dilemme," "Marthe," "En rade," and "En ménage."

HYACINTH (hī'à-sĭnth), a genus of flowering plants which belong to the order of *Liliaceae.* It includes many species, several of which are highly popular as garden flowers, especially the bluebell hyacinth. Dutch traders first brought the hyacinth to Europe from its nativity in the Levant in the early part of the 16th century. Since then it has been greatly improved by cultivation and bears many kinds of beautiful flowers of various colors. The bulb is stout and onionlike, the leaves are fleshy and linear, the stamens are six in number, the style is single, and the seeds are numerous. At Haarlem, Holland, are the most extensive bulb gardens in the world, where the finest double-flowering species have been originated. In early times it was cultivated in Asia Minor and as far east as Persia, where it is still a favorite flower. Many beautiful romances and literary productions mention the Oriental hyacinth but it has entered modern literature of all countries with even greater latitude.

BLUEBELL HYACINTH.

HYACINTHE (ē-à-sănt'), **Pere.** See **Loyson.**

HYATT (hī'ăt), **Alpheus,** naturalist, born in Washington, D. C., April 5, 1839; died in 1902. After studying at the Maryland Military Academy, he graduated at the Lawrence Scientific School, and in 1862 entered the Union army as a volunteer, attaining to the rank of captain. In 1867 he became curator of the Essex Institute, and in 1881 was appointed professor of zoölogy and paleontology at the Massachusetts Institute of Technology. He was honored by membership and official positions in various scientific societies, including the National Academy of Sciences, and was one of the founders and editors of the *American Naturalist.* His principal work is a classification of fossils, concerning which he brought out many theories in regard to the evolution of Cephalopoda. His books include "Genera of Fossil Cephalopods," "Observations on Freshwater Polyzoa," "Origin of Cellular Tissue," and "The Genesis of the Arietidae."

HYBRID (hī'brĭd), an animal or plant which is produced by the union of two distinct but closely allied species or genera. Extensive experiments have been made in relation to the crossing of species, and, while material knowledge and productive results have been obtained, there is yet a wide field for experimental investigation. It is quite certain that successful crossing extends largely to different genera, but reproduction will not take place from the union of different orders. Plant hybrids are produced artificially by applying the pollen of one species to the stigma of a plant closely allied. The theory that hybrids are uniformly sterile and that this sterility is provided in nature to prevent the confusion of species was long held by scientists. Darwin pointed out in his "Origin of Species" that this view is generally erroneous, and that two fundamentally different facts have been confounded by many writers, namely, the sterility of species when first crossed, and the impotence of the hybrids produced from them. His views imply that the sterility of various hybrids has arisen from divers causes and not from natural selection. He asserts that crosses between the progeny resulting from two breeds, called *mongrels,* are not uniformly sterile. From this fact he elaborates the view that there is nothing in the phenomena of hybridization from which to conclude that species had not existed at first as varieties.

Hybrids are secured between the toad and the frog and between the swan and the goose. In fishes they result from artificial impregnation, as between different species of the carp. Among mammals they are produced from the copulation between the tiger and the lion, the fox and the wolf, the ibex and the goat, the horse and the ass, the he goat and the female sheep, and the horse and the zebra. In many cases the hybrids are sterile, even though the crossing may be brought about without difficulty, while in other cases the act of conjunction may be more difficult but the hybrids produced are fertile. Generally it is impossible to secure offspring from crossing different species, but where it is possible it takes place between animals or plants having a fair degree of likeness. Some hybrids are sterile among themselves, but fertile with their parents. Usually the degree of fertility depends upon various physical peculiarities differing in degree among various species.

HYDE (hīd), **Douglas,** educator and author, born in Frenchpark, Ireland, in 1860. He studied at Trinity College, Dublin, where he took a special interest in Irish literature, which enabled him later to publish many standard works in Gaelic. The movement favoring the preservation of the Irish language met his hearty support, to which end he prepared a number of texts and advocated the use of that tongue in the homes. The Royal Irish Academy elected him to its membership. His writings include "Gaelic Songs and Folk Tales," "Literary History of Ireland," "The Love Songs of Connacht," "Story of Early Irish Literature," "Lad of the Ferule," "Beside the Fire," and "The Religious Songs of Connacht."

HYDE, Arthur M., public man, born at Princeton, Mo., July 12, 1877. He studied law and practiced as a lawyer in Princeton and Trenton. He was elected governor of Missouri in 1920 and served four years. In 1929 he entered the cabinet of President Hoover as Secretary of Agriculture.

HYDE PARK, a popular pleasure resort at London, England, occupying an inclosure of 400 acres. Formerly it was a park of the manor of Hyde, belonging to Westminster Abbey, but in the reign of Henry VIII. the grounds came into possession of the crown.

HYDE PARK, a popular suburb of Boston, Mass., on the Neponset River, about 8 miles south of the State House. It is on the New York, New Haven and Hartford Railroad, has electric railways and is a favorite residence place for Boston business men. The chief buildings include the public library and a number of schools and churches. It has systems of waterworks, pavements, and drainage. The manufactures include machinery, cotton and woolen goods, and curled hair. Population, 1905, 14,492; in 1920, 15,507.

HYDERABAD (hī-dĕr-ä-bäd′), or **Haidarabad,** capital of the state of Hyderabad, situated on the Musi River, in the southeastern part of India. It is elevated 1,800 feet above the sea and is important as a trade and railway center. The principal buildings include the Nizam's palace, the British government buildings, and a number of important Mohammedan institutions, among them a college founded in 1590. The Jama Musjid, a celebrated mosque, is built on the pattern of the great mosque at Mecca. It has many fine schools, churches, hospitals, and municipal improvements. The city has beautiful streets, several parks, and extensive gardens. It is noted for its manufacture of silks, turbans, woolen and cotton goods, and machinery. In recent years it has grown rapidly and is the fourth city of India. Population, 1922, 552,646.

HYDER ALI (hī′dĕr ä′lē), famous Indian prince, born in Mysore, in 1718; died Dec. 7, 1782. He was the son of a general of the Rajah of Mysore, succeeded to the same office, and soon after obtained Bangalore in fief as an inheritance. In 1759 he became regent ruler of Mysore and added Onor, Bednor, Calicut, and other adjacent districts to his dominion, making a total of about 84,000 square miles. His attention was turned to the development of agriculture, commerce, and educational arts, and by reorganizing the army he was able to persevere successfully against the encroachment of the British. While the latter were in war with the French in 1778, he and his son, Tippoo Sahib, occupied the country within forty miles of Madras, but they were later defeated under Sir Eyre Coote. His son succeeded him and likewise promoted civilized arts and protected religion, but he and his people were finally suppressed by the British.

HYDRA (hī′drȧ), in Greek mythology, a monster serpent with nine heads. It was the offspring of Typhon and Echidna and infested the vicinity of Lake Lerna, where it committed great depredations among the herds. To slay this monster was one of the twelve labors of Hercules. Accordingly he proceeded in the task, being assisted by his servant Iolaus, but as the heads were stricken off by his club two new ones grew forth. Hercules next burned away the heads of the hydra, but the center head, being immortal, he buried under an immense rock. Into the poisonous blood of the monster he dipped his arrows, which ever afterward rendered wounds inflicted by them incurable.

HYDRA, an island of Greece, off the east coast of Morea, near the Bay of Hydra. It is about eleven miles long and three miles wide, and has an area of 22 square miles. The surface is broken and barren and the shores are steep and rocky. The inhabitants are classed among the best sailors of Greece and during the war of independence performed important services. Hydra, the capital of the island, is located on a barren height near the northwestern shore. It has manufactures of soap, leather, and silk and cotton textiles, and carries on considerable trade with foreign countries. In 1825 the population was about six times larger than at present, but the decline of its trade has caused a decrease, being due to the improvement of other harbors. At present the inhabitants are centered almost entirely in the town of Hydra. Population, 1922, 7,086.

HYDRA, or **Hydroid,** a fresh-water polyp found in ponds, so named because its buds resemble the Hydra of mythology. It is usually found attached by a basal sucker to sticks, stones, and other objects in the water. The body is extensible and the terminal mouth is surrounded by a varying number of tentacles. It is one of the simplest forms of many-celled animals, the body being a simple tube. Young hydras bud out from the side of the older ones, and after a short time become detached and take on the form of their parents. If the body be divided into pieces, each piece will grow into a complete hydra. The food consists of small insects which are paralyzed by the barbed cells of the tentacles, and by them are carried to the mouth of the hydra, through which it enters into an internal digestive cavity, where the nutritive parts are absorbed, after which the indigestible portions are expelled through the mouth.

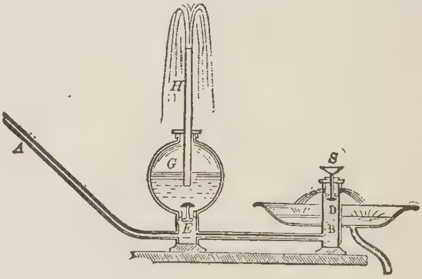
HYDRANGEA (hī-drăn′jẻ-ȧ), a genus of plants which belong to the saxifrage family, including about fifty species. They are favorite plants on account of the size and beauty of their flowers. The stalk is shrubby, the leaves are oval, and the flowers are showy and greatly variegated in color. They are employed in Japan to make a kind of tea and elsewhere in the preparation of medicine. The cultivated species include the snowy-leaved and oak-leaved hydrangeas.

SNOWY-LEAVED HYDRANGEA.

HYDRAULIC ENGINE (hī-drạ′lĭk), a machine which is propelled by the pressure of a column of water. It differs from the steam engine in that the piston of the cylinder is driven by water power instead of by steam. In construction machines of this kind are similar to steam engines, but, as the pressure under which they work is greater, they are usually smaller than the engines employing steam. The plungers in the cylinders are forced outward by the water being admitted through valves, and, when the outward stroke is completed, the water escapes from the cylinder, the plungers slide inward, and are again forced outward by a new supply of water. Some hydraulic engines are known as single-acting, while others of a different construction are double-acting. Generally the entire water pressure is cut off at the end of the outstroke, and the water exhausts by a valve after serving its purpose. The speed is usually slow, as power is increased by a corresponding decrease of speed, but the pressure is magnified so intensely that engines of this class are exceedingly powerful.

HYDRAULIC RAM, a machine for raising flowing water to a greater height than that of its source. It is utilized only where there is an abundant supply of water, for the reason that a portion of the water is wasted in the operation. In the hydraulic ram the momentum imparted to water in falling is utilized, this being sufficient to carry it to a height greater than that of the source, where it is held in place by the uplifting valve *E*. Valve *D* is located in a supply pipe *AB* beyond the uplifting valve *E*, which is closed periodically by the velocity of water running down the supply pipe. Successive reaction causes alternate jets of water to pass the uplifting valve *E*, into the chamber *G* above, in which the air becomes compressed. The valve *D* at the end of the supply pipe opens as soon as the pressure into the air chamber ceases, when the uplifting valve *E* closes, and the water passes through the supply pipe *AB*. The end valve *D* is closed again as soon as sufficient velocity is gathered, and water is forced into the air chamber *G*. A continued series of operations forces the water to the proper height to be utilized for the purpose intended, flowing out of pipe *H* in successive jets. The first self-acting hydraulic ram was invented in 1796 by Joseph M. Montgolfier (1740-1810), who secured a gold medal at the exposition of 1802 held in France.

HYDRAULICS, the branch of science which treats of liquids in motion. It describes the flow and elevation of liquids, and the machines for moving liquids or intended to be moved by them. Water is taken as the type, and in theory its principles are those of falling bodies, but they cannot be relied upon in practice except when verified by experiment. The discrepancy arises from various conditions, such as the shape of the orifice; the changes of temperature, which vary the fluidity of the liquid; and friction. *Hydraulic engineering* treats of the control and management of water by the practical application of the mechanics of fluids, particularly such as are concerned in water power, artesian wells, canals, hydraulic machines, waterworks, pumps, dams, and water motors. The energy or capacity for work found in pressure transmitted by water is termed *hydraulic power,* and is exemplified in engineering by the water pressure in pipes, cylinders, and channels.



HYDRAULIC RAM.

When a fluid is confined in a vessel and a certain amount of pressure is exerted on a given area, an equal amount is transmitted in all directions to every equal area on the walls of the vessel. If the area of the external pressure surface is decreased, the whole pressure may be increased proportionately. It is on this principle that such mechanical structures as jacks, hydrostatic presses, rail benders, elevators, punches, and lifts are operated successfully. Hydraulic engineering likewise is concerned with the velocity of rivers, water motors, undershot wheels, overshot wheels, turbines, and breast wheels. In the construction of machinery to employ hydraulic power the principle is utilized that pressure is equal in all directions, area for area, as well as in all parts, which makes it possible to obtain increased pressure by giving a larger surface to the working area against which the pressure is exerted. In this way a magnified pressure is obtained at one end from only a small pressure at the other.

The first *hydrostatic press* for utilizing this principle dates from 1796, but at that time only the simplest form of the apparatus was known. Since then vast strides of progress have been made in the application of hydraulic power. It may be said that improvements in this line have kept pace with the use of compressed-air apparatus and electric motors. Where great power is required for short intervals, hydraulic power is preferable, since it is not expensive when idle. It is utilized extensively in sheet-punching machines and in riveting. The hydrostatic press is to some extent taking the place of the steel hammer for forming wrought iron and steel. Some of these have a capacity of 4,000 tons. Notable examples of vast machinery of this class may be found in some of the larger manufactories of Pennsylvania, in which from six to twenty tons of pressure is secured to the square inch. Another use to which this power is now applied extensively is in tunneling operations. The machinery thus employed is adequate to penetrate through various formations with success, and serves to push aside small boulders with little difficulty. Wherever the nature of the ground permits it, tunneling is carried on most extensively by hydraulic shields. Notable incidents of successful operations of this character within recent years are those at the Saint Clair River and the tunneling under the Thames, in London, in 1897.

HYDROCARBON (hī-drô-cär′bŏn), a compound containing only hydrogen and carbon, such as benzine and methane. This compound occurs in many plants as wax or essential oil, in natural gas, gutta-percha, petroleum, caoutchouc, etc. The hydrocarbons are of considerable commercial importance. They are insoluble or slightly soluble in water. The natural decomposition of organic substances is the chief source of hydrocarbon, but they may be produced by artificial means, such as making gas by the destructive distillation of coal.

HYDROCHLORIC ACID (hī-drô-klō′rĭk), or **Muriatic Acid,** a corrosive gas consisting of equal volumes of hydrogen and chlorine. It is colorless, has a suffocating odor, and has a marked affinity for water. Great quantities are obtained in making soda, by the acting of sulphuric acid on common salt. During volcanic eruption this gaseous compound is set free, hence is found in the water of lakes and rivers that have their source in volcanic formations. In medicine it is used in a greatly diluted form as a tonic and an astringent. Its chief commercial use is in manufacturing bleaching powder and in preparing phosphorous, glue, artificial waters, and carbonic acid.

HYDROFLUORIC ACID (hȳ-drô-flû-ŏr′ĭk), a volatile liquid obtained by the action of sulphuric acid on fluorite. It is colorless and very corrosive and has a pungent, suffocating odor. Since it attacks all silicates, such as glass or porcelain, it is employed chiefly for etching upon glass and to decompose and dissolve silicates in mineral analysis. To preserve it for use, it is necessary to have it in a vessel made of lead, caoutchouc, platinum, or gutta-percha.

HYDROGEN (hī′drô-jĕn), an element which is very abundant in nature, occurring as a constituent of water and of all organic compounds. It may be obtained by pouring hydrochloric acid over granulated zinc. If this mixture be confined in a tall jar, an effervescence arises and gas forms at the mouth of the jar, which may be lighted by applying a match, when a large stream of very pale flame shoots into the air. Water may be decomposed into its elements, hydrogen and oxygen, by the action of an electric current. It may be obtained by bringing the vapor of water in contact with red-hot iron filings. Hydrogen is the lightest substance known, being 14½ times lighter than air and 11,160 times lighter than water; hence, it is taken as a standard in comparing atomic weights and volumes. If it be breathed in a pure state, death results, not by poisoning, but from the absence of oxygen. Six volumes of air with two of hydrogen form an explosive. In blast furnaces requiring unusual heat it is burned in oxygen gas, these two elements being necessary to produce the most intense heat.

Pure hydrogen is a gaseous element, is odorless, tasteless, colorless, and slightly luminous when lighted, but intensely hot. It is a powerful refractor of light and is the only gas that conducts heat. It combines with many of the other elements, but under ordinary circumstances its affinities are not very pronounced. Heat is required to bring about the union of hydrogen and oxygen, and chloride combines with it under the influence of light. Compounds of much utility and importance are formed with or of it, such as ammonia, when combined with nitrogen; hydrochloric acid, when united with chlorine, and hydrofluoric acid, when combined with fluorine. It does not occur extensively in a free state, but escapes as a gas in many of the petroleum regions, such as are met with in Pennsylvania and Ohio. Hydrogen forms, in combination with oxygen, one-ninth part by weight of water.

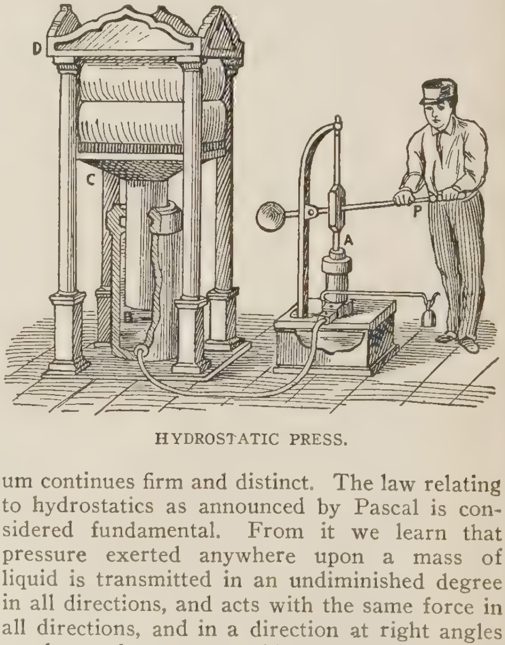
HYDROGRAPHY (hī-drŏg′rȧ-fȳ), the art of surveying bodies of water, such as lakes, rivers, and the ocean. It relates to the determination of the contour, depth, character of the bottom, and other phenomena of bodies of water. As a branch of geography, it relates to the water surfaces of the earth, including the general characteristics of currents, icebergs, winds, and other phenomena that affect the sea. It treats of the systems of rivers, of lakes, and other bodies of water that are associated with the land. Hydrographic departments are maintained by all the leading governments. The purpose of these is to make coast surveys, direct soundings, and conduct other work of research which tends to promote navigation and other industrial enterprises.

HYDROGEN DIOXIDE (dī-ŏks′ĭd), a colorless liquid obtained by the action of acid on barium peroxide. *Oxygenated water* and *peroxide of hydrogen* are other names for this compound. It resembles water, but has a bitter, sour taste. It is found in nature in small quantities, especially in some plants and in rainwater. Large quantities are manufactured for an oxidizing and bleaching agent, such as are used for bleaching hair and textiles. In medicine it is used as a tonic to overcome indigestion and in the treatment of diphtheria.

HYDROMETER (hī-drŏm′ē-tẽr), an instrument used to determine the specific gravity of a liquid. It consists of a small glass tube to which two larger bulbs are sealed, one above the other. In order to keep the stems of the instrument vertical, a weight, either mercury or small shot, is put into the lower bulb. The upper end of the stem is graduated decimally, and the instrument sinks to the point marked zero when immersed in water. A liquid that is heavier than water will not permit it to sink to the zero point, while one lighter than water will permit it to sink below the point marked zero. Special forms of hydrometers are used for particular liquids. A *lactometer* is used for testing the purity of milk, and an *alcoholmeter* for determining the per cent. of absolute alcohol in spirits.

HYDROPHOBIA (hī-drō-fō′bĭ-ȧ), or **Rabies,** a disease which is communicated by the bite of a rabid animal, due to a specific virus in the saliva. Dogs are the most liable to be afflicted with madness, but there are other animals subject to the disease, particularly cats, wolves, raccoons, and foxes. In hydrophobia the patient experiences great nervous disturbance, difficulty of swallowing, convulsive dread of water, and spasmodic muscular contractions. The symptoms of the disease appear from six weeks to eighteen months after the bite is inflicted and death results about three days after the specific symptoms begin. To prevent affection it is advisable to impede the circulation from the wound by bandages, stopping the flow of blood, and cauterizing with an iron at a white heat, or with nitrate of silver, but any burning or cauterizing agency may be used. In 1884 M. Louis Pasteur announced that protection against hydrophobia can be secured by inoculation with a prepared virus. Inoculations are effected by marrow taken from a rabid animal and are made consecutively, first with weak virus and then with stronger, and they are increased gradually in strength until the strongest obtainable is injected into the system. In this way the parasitic cause of the disease may be destroyed. Institutes have been established in New York, Paris, and other cities where this method has been thoroughly tested and the patients treated are cured almost universally. Out of 21,631 cases treated at the Pasteur Institute in Paris, France, in a period of fourteen years, all the patients except 99 were cured.

HYDROSTATICS (hī-drō-stăt′ĭks), the branch of science which treats of the pressure and equilibrium of liquids. Its principles apply to all liquids, but water, on account of its abundance, is taken as the type. A liquid placed in several vessels communicating freely with each other comes to rest in all at the same level, or height. Two or more liquids placed in the same kind of vessels arrange themselves according to their relative densities, after which the equilibrium continues firm and distinct. The law relating to hydrostatics as announced by Pascal is considered fundamental. From it we learn that pressure exerted anywhere upon a mass of liquid is transmitted in an undiminished degree in all directions, and acts with the same force in all directions, and in a direction at right angles to the surfaces upon which it is exerted. It may seem impossible at first thought that a pressure of one pound is sufficient to produce a pressure of 100 pounds, but this is only an exemplification of the general law of mechanics that applies to both liquids and solids. If a force of one pound on one square inch causes motion by pressing through the medium of 100



HYDROSTATIC PRESS.

square inches, the velocity of the body moved is only one-hundredth of that of the body applying the pressure.

In the hydrostatic press this principle is taken advantage of by filling two connected cylinders with water, as shown in the illustration. If the smaller cylinder, *A,* has an area of one square inch, and the larger cylinder, *B,* 100 square inches, then a downward pressure of one pound on each square inch, by means of the lever, *P,* acting on a piston in the small cylinder, lifts a weight of 100 pounds. *C* is a platform and *D* a strong frame, between which the compression takes place. If the pressure downward be 100 pounds, it balances 10,000 pounds, and in like proportion the pressure of the hydrostatic press may be increased to 200 or 300 tons. This class of machinery is utilized extensively in raising heavy weights, for testing anchors, and for other purposes where immense pressure is necessary. Other matters investigated in the study of hydrostatics are the equilibrium of floating bodies, the buoyancy of liquids, the specific gravity of liquids, and the four laws of equilibrium. These laws embrace: 1. At any point within a liquid at rest the pressure is the same in all directions. 2. The pressure increases with the depth. 3. The pressure does not depend on the shape or size of the vessel, but on the area and depth. 4. Water seeks its level.

HYDROTHERAPY (hī-drȯ-thĕr′ȧ-pў), or **Water Cure,** a method of treating diseases by the frequent and copious use of water, both internally and externally. It has long been recognized that water is an efficient agent in the cure of numerous forms of diseases. Hippocrates employed it to a considerable extent, and it has continued to be advocated as a remedial agent, especially in the treatment of acute and some forms of chronic disorders. Many institutions of Canada and the United States use the hydropathic treatment, either as supplementary or exclusive, though it is generally recognized by physicians that this method is not efficient in all maladies. However, it is looked upon as a potent stimulating remedy, and is efficient in that it cleanses the body and tends to produce greater uniformity and vigor in the various organs. Fevers are reduced by bathing, sore throat and tonsilitis are relieved by hot and cold water compresses, the circulation is stimulated by local bathing, and various other forms of treatment are universally recognized as efficient.

HYENA (hī̇-ē′nȧ), a genus of flesh-eating quadrupeds found in Asia and Africa. They are characterized by strong teeth well adapted to breaking the bones of their prey, extended claws, a rough tongue, prominent eyes, long and acute ears, and fore legs longer than the hind limbs. Their gait is shambling, but they are able to move with considerable speed. Long, coarse hairs cover the body and form a mane and enlargement on the back. They feed on carrion, but also on fresh flesh, and devour carcasses in an advanced state of decay. Their claws are well adapted for digging, on account of which they are reputed to dig into newly made graves. At night they come out of their places of seclusion and gather in packs like coyotes, often attacking domestic animals and even children. At least four species are recognized, of which the *striped hyena* of Western Asia and Northern Africa has been known the longest. The ancients knew of these animals and attributed many peculiar habits to them. A closely related species called the *spotted hyena* is found in South Africa. It has a yellowish color with numerous spots, and is more ferocious and somewhat smaller than the striped hyena. The *strand wolf* is a species allied to the spotted hyena, has a grizzled-brown color, and is found in the vicinity of the Orange River. The *brown hyena* is native to Natal and the southeastern part of Africa. Remains of extinct species occur in Germany, France, and England. They are known as the cave hyena, from their remains occurring in caves formed during the glacial epoch.

SPOTTED HYENA.

HYGEIA (hī̇-jē′yȧ), or **Hygieia,** in Greek mythology, the daughter of Aesculapius and the goddess of health. Artists represent her as a virgin in flowing garments feeding a serpent from a cup, while poets speak of her as a goddess with bright glances and a favorite of Apollo. The Romans identified her with the goddess Salus.

HYGIENE (hī′jĭ-ēn), the branch of medical science which relates to the preservation and improvement of health, both in individuals and communities. This branch of study has been receiving increased attention within recent years, and by means of modern agencies it has been possible to both improve the general health and prolong materially human life. The period in which delicacy was considered an element of beauty has passed away, and it is now sought to so develop the body in its powers and usefulness that it may be a fit dwelling for the mind and soul. Strength and vigor physically are looked upon as personal and national blessings, while weakness and timidity are deplored. Not only is it sought to provide the most highly sanitary conditions for the preservation of health in individuals, but a public policy is pursued by the authorities, and institutions are maintained under which the most favorable conditions of healthy living may be vouchsafed to all classes of people in rural and urban districts. The establishment of sewer systems in the cities, the provision of a water supply, the removal of waste materials, and the regulation of lighting and ventilation of public buildings are the outgrowth of economic study. They exhibit the public concern that civilized nations have for the best interest of each individual community.

Though public hygiene has been made a subject of investigation by the leading nations for many centuries, definite aims regarding the promotion of public health and the prolongation of human life did not take form until the beginning of the 18th century. Besides, it cannot concern itself specially with the diet of persons, since each individual may choose for himself in relation to the diet of his household and the use of medicines so long as they do not interfere with the rights and welfare of others. However, conditions have been provided generally, whereby individuals may take advantage of public conveniences, that both the comforts and sanitary conditions may be rendered of the highest character for all.

Legislation has been directed with the view of supervising the sale of drugs, liquors, and articles of food. The aim is principally to protect purchasers against adulterations and to counteract the tendency of unscrupulous manufacturers to take advantage of the public by placing on sale articles of great inferiority, with the view of inducing their purchase by consumers under the apprehension that they are pure and genuine. Instances of this are seen in the laws regulating the sale of oleomargarine, those preventing the sale of diseased meats, and those forbidding the exposure of persons affected with contagious diseases. Pure air is an important essential in promoting public hygiene, since we consume it infinitely beyond our consumption of food. This has been recognized by the government and city authorities, which is evidenced in the regulations requiring cleanliness in cities, providing for the grading of sites, and stimulating numerous other sanitary measures. Material advancement in our knowledge of the sciences and the regulation by law of the practice of medicine, especially such as requires rigid examinations for admission to practice the profession, have likewise been material agencies in public hygiene. Such discoveries as those of Jenner in relation to vaccination against smallpox, those of Koch in the treatment of consumption, the discoveries of antitoxin as a remedy in diphtheria, and many others equally important have had a marked influence in preserving human life as well as preventing a weakening of the general system by diseases long affecting the individual. A proper knowledge and observance of hygienic laws are thus lessening greatly the number of persons afflicted with such diseases as consumption, rheumatism, dyspepsia, gout, cholera, hydrophobia, smallpox, and others.

It is found that one-half the children in some parts of England die before they reach the age of five years, and it is estimated that 100,000 persons die annually in that country from causes easily preventable. What is true of England is true of other countries to a varying extent. The movement now in progress looking toward better observance of individual and public rules of health will lessen fatalities at immature ages very materially. Besides, the advancement of education and public intelligence is having a wholesome effect. One of the most prolific reforms ever instituted is that in the case of scurvy, a disease formerly prevalent among sailors, but now entirely avoided by the use of vegetables or lime juice. Much progress has been made in the construction of jails and prisons, which formerly contained few provisions calculated to maintain the health of those confined, while now the most wholesome sanitary rules are enforced with much care.

Another prolific movement in stimulating the public health is found in the construction of school buildings. We have learned from past experience that the early years of life need especial consideration, since during the formative period it is very important that the different organs of the body be provided with conditions favorable to growth and that overstrain of immature organs be avoided. To effect this the clothing, food, and cleanliness of children need careful attention, while schoolhouses must be well ventilated, lighted, warmed, and provided with adequate sanitary drainage. Child study has become a branch of intense interest. Teachers everywhere are concerning themselves with the study of the individual capacity of each child, its powers, inclinations, and weaknesses, thereby becoming better fitted to provide especially for the nature and need of each child life. It is not now a question whether children should begin study at four or eight years, but rather when each individual child possesses maturity and strength sufficient to begin the work of the schoolroom. Thus, the prevention of disease by culture, disinfection, sanitary regulations, pure food and water, and other measures for individual and public health have been and are among the immediate duties. To cure a disease is wholesome, but to prevent it is far better, such prevention being the object of intelligent application of effort in medicine, instruction, and all lines of progressive institutional development.

HYGROMETER (hī-grŏm′ê-tẽr), an instrument for measuring the degree of moisture contained in the atmosphere. Various forms of this instrument are in use. It is an essential supply in the weather bureau of the government. The Daniell hygrometer consists of a bent glass tube terminating in two bulbs, one of which is covered with muslin, and the other is of black glass or is coated with metal. The latter contains some ether and a thermometer. When ether is poured on the muslin, the black ball, cooled by the evaporation of the ether within, is soon covered with dew. At this time the inclosed thermometer indicates the dew-point, and this, compared with the reading of a thermometer in the air, determines the humidity.

HYKSOS (hĭk′sôz), meaning shepherd kings, the name of several Egyptian kings who reigned from about 2200 B. C. to 1700, a period of 500 years. Their capital was at Tanis, the Zoan of the Bible. It is thought that their ancestors were nomadic tribes of Syrians and Arabians in Canaan, who later settled in Egypt, and while there adopted the customs and religion of that country.

HYMEN (hī′mĕn), in Greek mythology, the god of marriage. Some writers consider him the son of Apollo and one of the Muses, but others regard him a mortal who rescued some Attic maiden from robbers, after which hymeneal songs were written as a token of gratitude. The practice of singing such songs at the nuptial season became universal, and the heroic youth was gradually elevated to the rank of a divinity. In works of art Hymen is represented as a tall, handsome youth, carrying in his right hand a bridal torch.

HYMNOLOGY (hĭm-nŏl′ô-jў), the science of sacred miracle poetry, or the hymns used at a particular time or place. Formerly the term was restricted to hymns which were written to praise God in the form of songs, but it is now defined as a lyric expression of religious feeling. The Greeks dedicated many hymns to their gods and heroes and these were usually sung at festivals. The older Greek hymns, as those written by Homer, are chiefly descriptive and are classed with the epics, while those of Pindar and the later poets are largely lyric. Many hymns are contained in the sacred books of the Orient, especially the Vedas, and these have been translated extensively into the languages of Europe. However, the Jewish psalms are the most familiar of all the sacred poems of antiquity and they have become familiar to all the Christian churches. Ambrose and a number of other Latin hymn writers have enriched literature with many lyric poems that have become well known in the civilized nations. These include "Stabat Mater" (The Mother Stood), "Dies Irae" (q. v.), and "Veni, Sancte Spiritus" (Come, Holy Spirit).

The Reformation gave birth to much interest in sacred songs, which were made an instrument by the Protestants in spreading the new faith among the nations. It is especially noteworthy that Luther was a potent factor in forming and directing the writing of hymns, chiefly because he wrote in the common language of the people. His "Ein' feste Burg ist unser Gott" (A Mighty Fortress is Our God) is still in wide use. To the same period belongs Martin Rinkart, the composer of "Nun danket alle Gott" (Now Thank We all Our God). Paul Gerhardt (q. v.) wrote a large number of sacred hymns and many of these were translated into English by John Wesley, including "O Sacred Head Once Wounded." Isaac Watts (1674-1748) is one of the most prolific English writers of hymns and is frequently referred to as the "father of English hymnody." His collection published under the title "Divine and Moral Songs for Children" was long a standard and popular work. Charles Wesley (1707-1788) is the author of about six thousand hymns, several hundred of which are still in popular use, and at least twenty may be classed among the favorite sacred songs in the English language. Other English writers of hymns include John Keble, William Cowper, Frances Ridley Havergal, and John Henry Newman, the last mentioned being the author of "Lead, Kindly Light."

The evangelistic movement of the 19th century was the means of producing and making popular a favorite class of church hymns. Some of these were not of a high order, but many were exceptionally appropriate and are at present in great favor among the Christian churches. These include "Nearer, My God, To Thee," by Sarah Flower Adams; "Just as I am Without One Plea," by Charlotte Elliot; "My Faith Looks Up to Thee," by Ray Palmer; "Battle Hymn of the Republic," by Julia Ward Howe; "One Sweetly Solemn Thought," by Phoebe Cary; "Pass Me Not, O Gentle Saviour," by Frances Jane Crosby; "My Country, 'tis of Thee," by Samuel Francis Smith; and "Onward, Christian Soldier," by Arthur S. Sullivan.

The music in use for hymns among the early Christians was heavy and somber, and many melodies were in the form of chants. These were rarely sung in the common language, but were more generally chanted in the Latin. Luther translated many of the popular tunes into German, thereby seizing the opportunity for reforming the church music as well as making it an instrument of education and public worship. Johann Sebastian Bach (q. v.) developed the structural side of music and emphasized the rythmic element. The movement of reform in music spread to France and England in the 18th century. The popular epoch was reached in the latter country through the hymns of Isaac Watts and Charles Wesley. In the earlier period of this movement the music was rather somber and solemn, but later it became livelier in character. To the latter class belong the hymns used extensively by Moody and Sankey in America.

HYMNS (hĭmz), **National.** See **National Hymns.**

HYPATIA (hī-pā'shĭ-ȧ), illustrious female philosopher, born in Alexandria, Egypt, about 355; died in 415 A. D. She was a daughter of Theon, a mathematician and astronomer, and under his instruction became highly educated. Subsequently she studied under Plutarch at Athens. On returning to Alexandria, she acquired skill as a teacher of astronomy, geometry, and philosophy, and both as a pagan and instructor she provoked the hostility of Cyril, Bishop of Alexandria. The breach was widened by her friendship with Orestes, who was at constant feud with the bishop. This caused Cyril to stimulate hostility against her among the more ignorant clergy, who conspired and murdered her in the church named Caesareum. She wrote several treatises on mathematics, but they are not extant at this time. Charles Kingsley made her the heroine of his "Hypatia, or New Foes with an Old Face."

HYPERION (hī-pē'rĭ-ŏn), in Greek mythology, the son of Uranus and Gaea and the husband of Theia. He is represented as a Titan. Hesiod regards him the father of Helius, the sun god. See **Titan.**

HYPNOTISM (hĭp'nō-tĭz'm), a method of artificially inducing sleep, formerly called animal magnetism and mesmerism, but the results differ from sleep by several striking peculiarities. See **Mesmerism.**

HYPODERMIC INJECTION (hĭp-ō-dẽr'mĭk), a method of treating disease by introducing medicine beneath the skin, where it is taken up directly by the blood. It was first used by Alexander Wood of Edinburgh, Scotland, who injected remedies by means of a fine hollow needle connected with a small syringe. Medicine injected in this way is absorbed speedily. The pain is felt less acutely if the point of the needle is lubricated with carbolic oil or some similar preparation. This method is particularly valuable in cases where the stomach or other organs make it inadvisable to administer by the mouth, and it requires less bulk and is more rapid in its effects. Morphia and other vegetable alkaloids are often administered in this way, but all the drugs and instruments used should be carefully sterilized.

HYPOTHESIS (hī-pŏth'ē-sĭs), a supposition made without evidence, or with insufficient evidence of its own, in order to deduce conclusions in agreement with real facts. In this sense it may be said to be a defective kind of proof, there being some missing link, and the question is raised upon the proposition that this be made good in other ways. In the geological investigation concerning the transportation of boulders, we have various suppositions regarding icebergs, glaciers, and water currents, and by verifying observations and making deductions we are able to arrive at a strictly scientific theory, which accounts for the existence of boulders at certain localities. Newton's supposition was that celestial attraction is the same force as terrestrial gravity. He thus proceeded upon a known cause, the hypothetical element being the extension of gravity to the sun and planets. The great amount of coincidence in this case has justified the assumption that the two attractions are the same, hence the hypothesis has been proven by its consequences. As no rival supposition has ever stood the same test, the theory of Newton is considered as beyond the reach of challenge.

HYRAX (hī'răks), a genus of small mammals native to Asia and Africa, somewhat similar in size and appearance to the rabbit. The body is covered with fur, the tail is short, and the snout or muffle is split like that in the rodents. A species called *klipdas* is native to South Africa, where it is also known as the Cape hyrax. These animals have the pads of the feet so arranged as to give a slight suction, hence they are able to climb about smooth rock and the lower limbs of trees with much agility. A species native to Syria is called *cony* in the Bible and is known locally as the *daman.* The flesh is eaten by the Arabs and others, but it is not considered very palatable by Europeans. The skin is used in making cloaks and other wearing apparel.

HYSSOP (hĭs'sŭp), a genus of labiate plants native to Southern Europe and Asia, but now cultivated extensively in gardens. They are perennial, shrubby plants, grow to a height of two feet, flower from June to September, and have an agreeable aromatic odor. They yield a kind of camphor, but are cultivated more largely for their beautiful blue flowers. Many species are grown in flower gardens, some of which are mentioned in both the Old and New Testaments. They are spoken of as the symbol of spiritual purification from sin.

HYSTERIA (hĭs-tē'rĭ-ȧ), an affection of the nervous system, in which the excitability is exaggerated and the will power is reduced correspondingly. While it affects both sexes, it occurs almost exclusively in women. The chief symptoms are a choking sensation, uncontrollable laughing and crying, and convulsive and irregular movements of the head and limbs. Hysteria is often due to worry, overwork, irregular habits, and great mental excitement. Though formerly regarded as of little consequence, it often takes the form of a dangerous disease. It is generally curable by mental treatment alone, but requires a removal of the causes that produce the disease, and the patient should have wholesome nourishment and healthful exercise.

I

I, the third vowel and ninth letter of the English alphabet. In the early Phoenician and Greek alphabets, from which it was derived, it was formed somewhat like the letter z. Up to a comparatively late date *I* and *J* were regarded as one character, and in dictionaries the words beginning with these letters were classed together. It has two principal sounds, the long and short. The *long sound* is represented in such words as *find, bind, wind* and the *short sound,* in *bill, pin, fill.* In addition to these, it has three minor sounds, as in *dirk, intrigue,* and the consonantal sound of *y,* when followed by a vowel, as in *billion* and *Christian.* *I* is the pronoun by which a speaker or writer denotes himself, being the nominative case of the first personal pronoun of the singular number.

IBADAN (ê-bä′dȧn), an important town of Western Africa, in the Yoruba country, 75 miles north of the Bight of Benin. The town is surrounded by walls and is connected with Lagos by a railway. It contains 25 mosques, a system of Mohammedan schools, and numerous temples. The trade is important, especially in cotton, live stock, clothing, and fruits. Population, 1922, 198,408.

IBAGUÉ (ē-vȧ-gâ′), a city of Colombia, capital of the department of Tolima, sixty miles west of Bogotá. It is situated on a fertile plain and has a healthful climate. The surrounding country is rich in silver and sulphur mines. Ibaqué was founded in 1550. Population, 1922, 16,475.

IBÁJAY (ê-vä′hī), a town of the Philippines, on the island of Panay, about sixty miles northwest of Cápiz. It has considerable trade in amber, rice, tobacco, and fruit. Population, 1922, 11,375.

IBARRA (ê-bär′rȧ), a city of Ecuador, capital of the department of Inbabura, sixty miles northeast of Quito. The surrounding region is volcanic and the city has suffered from earthquakes at different times, hence it has declined somewhat in importance. The chief industries are cotton and woolen mills, machine shops, and brickyards. Population, 1922, 13,506.

IBERIA (ī-bē′rī-ȧ), the name by which Spain was known to the Greeks and other ancient peoples. It was probably derived from the Iberus or Ebro River, and the inhabitants were called Iberians. These people are represented in the modern Basques (q. v.), who speak a language derived from that of the ancient Iberians. They were of low stature and are sometimes identified with the Picts and other groups. English writers generally apply the term Iberian to the Mediterranean race. In this larger sense the Iberians form the basis of the inhabitants in Spain, Portugal, France, and Italy.

IBERVILLE (ê-bâr-vêl′), **Pierre Le Moyne, Sieur d',** soldier and explorer, born at Montreal, Canada, July 20, 1661; died July 9, 1706. He entered the French navy at an early age, but later turned his attention to the study of army tactics. In 1686 he conducted an expedition from Ottawa to James Bay, where he captured Fort Nelson from the English. He took part in the destruction of Schenectady in 1690 and soon after destroyed Saint John and other possessions of the British in Newfoundland. He gained several victories in Hudson Bay in 1697 and two years later took possession of Louisiana, where he fortified Biloxi. In 1700 he ascended the Mississippi River and soon after established a settlement near Mobile. The province of Louisiana, founded by Iberville, remained a French possession until 1803, when the territory was purchased by the United States.

IBEX (ī′bĕks), the general name of several species of wild goats, of which the common ibex is the best known. This species, called *bouquintin* by the French and *steinbock* by the Germans, is about five feet long from the nose to the tip of the tail, and is two feet eight inches high at the shoulders. The horns are large, about thirty inches long, have flattened sides, and contain numerous ridges and knots. The hairs are short and thick, reddish-brown in summer and grayish-brown in winter, and the beard is short and dark. The females have shorter horns than the males and are of an ashy color. This species of ibexes inhabits the Alps of Europe and the Spanish side of the Pyrenees. Three other species are found in Asia and in the Abyssinian Mountains, of which the *Himalayan ibex* is the most important. The ibexes have similar habits to those of other wild goats, preferring the highest mountains. They are skilled in passing over precipitous places.

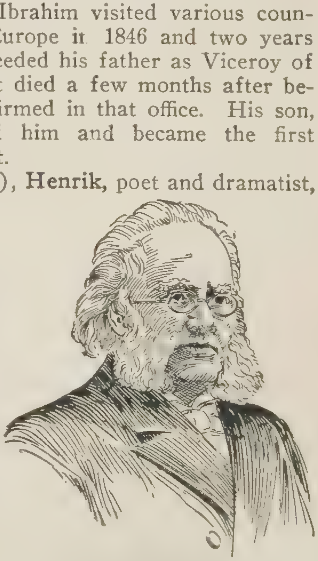
IBICUI (ē-bê-kwē′), or **Ibicuy Guassu,** a river in the province of Rio Grande do Sul, Brazil, which is formed by the Rio de Santa Maria and several other sources, and after a course of 400 miles joins the Uruguay near Yapeyu. Its upper branch is called Ituzaingo.

IBIS (ī′bĭs), a genus of wading birds allied to the storks, herons, and spoonbills. The species, of which there are ten or twelve, are widely distributed in America, Eurasia, Africa, and the islands of the sea. The *red* or *scarlet ibis* is an American bird and is found most abundantly in the Amazon region of South America. It is about three feet long, the extended wings measure over three feet, and the bill is about seven inches long. The *white ibis* abounds in Florida, the *strawneck ibis* is native to Australia, and the *glossy ibis,* a bird of fine silky plumage of dark green color, is found in Eurasia and Egypt. The *wood ibis* found in the southern part of the United States is not an ibis, but belongs to the stork family. However, the most remarkable species of this genus of birds is the *sacred ibis,* which is found throughout Africa. It was worshiped by the ancient Egyptians. They reared and cared for this bird in their temples and embalmed the body after death. It is about the size of a common fowl, has white plumage with black tips on the wings, and the head and neck are bare. It formerly inhabited the Lower Nile, but is found farther south at present, in the regions of the lakes and Central Africa. The flight of ibises is rapid. They lay three or four eggs, which are considered excellent as food, but the flesh is not eaten, except by natives. Being aquatic birds, they prefer to feed on fish, mollusks, frogs, and other forms of animal life common to rivers and the sea.

SACRED IBIS. WOOD IBIS.

IBRAHIM PASHA (ĭb-rȧ-hēm′ pȧ-shä′), Viceroy of Egypt, adopted son of Mehemet Ali, born in Kavala, Rumelia, in 1789; died in Cairo, Egypt, Nov. 9, 1848. He became associated with the Egyptian army at an early age and attained successes against the rebel tribes of Upper Egypt and the Mamelukes in Nubia. In 1816 he defeated the Wahabis of Arabia, after which he returned to Cairo and began to discipline his forces in accordance with the military rules of Europe. In August, 1824, he led an expedition for the Turks against the Greeks, who had risen to establish Hellenic nationality. The allied forces of France, Russia, and England having defeated the Turkish and Egyptian fleet at Navarino in 1827, Ibrahim was recalled to Egypt, where he again occupied himself by reorganizing the army and navy. In 1831 he attained successes on the coast of Syria, took Gaza, Jaffa, and Kaiffa, and laid siege to Acre. The following year he pushed forward to Damascus and defeated a powerful Turkish army at Konieh, but the prizes gained by force of arms were limited by the powers to Syria. In 1839 war broke out anew and Ibrahim attained success over the Turks at Nezib, but, by the interference of the British, Syria was restored to Turkey in 1841. Ibrahim visited various countries of Europe in 1846 and two years later succeeded his father as Viceroy of Egypt, but died a few months after being formally confirmed in that office. His son, Ismail, succeeded him and became the first Khedive of Egypt.

IBSEN (ĭp′sẹn), **Henrik,** poet and dramatist, born in Skien, Norway, March 20, 1828; died May 23, 1906. He was apprenticed to a chemist at Grimstad in 1842, but soon after took up the study of literature. In 1850 he was admitted to the Christiania University as a student, but did not complete a course. He next engaged for two years in journalistic work, and then became director of



HENRIK IBSEN.

the theater at Bergen, which was owned by Ole Bull. While there he published dramas and lyric poetry and in 1857 became director of the national theater in Christiania, where he also continued his literary employment. In 1864 he traveled extensively, residing consecutively in Rome, Dresden, and Munich. His writings are realistic and designed for moral purposes. They aroused marked attention in Germany, the United States, and England, as well as in Scandinavian countries. The Parliament of Norway granted him a pension in 1866. His writings include "Warriors in Helgoland," "Pillars of Society," "The Lady from the Sea," "Master Builder," Emperor and Galilean," "When We Dead Awaken," "The League of Youth," "On the Mountain Plains," and "An Enemy of the People."

IBYCUS (ĭb'ĭ-kŭs), a noted lyric poet of Greece, born at Rhegiun in the 6th century B. C. He lived for some time at the court of Polycrates, the tyrant of Samos, and his death occurred near Corinth, where he was attacked and fatally wounded by robbers. It is said that he cried out before dying that his death would be avenged by a flock of cranes that were flying overhead. Shortly after one of the murderers, while attending a theatrical performance at Corinth, when seeing a flock of cranes flying, cried out, "Behold the avengers of Ibycus," from which the criminals were discovered and punished. Only fragments of his writings remain. Schiller recites the story of his life in "The Cranes of Ibycus."

ICA (ê-sä'), or **Putumayo,** a river of South America, rises in the Andes of Colombia, and joins the Amazon near San Antonio, in Brazil. The general course is toward the southeast. It is about 1,000 miles long and the greater part of this distance is navigable. The valley of the Içа is covered with fine forests and the region is sparsely settled.

ICE, the name of water when it is congealed or frozen into a solid mass. This occurs in case the temperature is reduced to 32° Fahr., when a condition is reached which is designated as zero on the Réaumur and Centigrade scales. At 39.2° Fahr. water begins to expand as the cooling process goes on, and continues until 32° is reached. Thus a given quantity of ice is lighter than an equal quantity of water, on account of which ice floats on the surface of water. It is due to this fact that the lakes and oceans do not freeze solid, since the protective covering formed by ice on the surface prevents the escape of heat stored in the water. If it were not for this phenomenon, the solid masses of ice formed in large bodies of water would not be melted by the heat of a tropical sun in the warmer seasons of the year, and at least three-fourths of the earth would be incapable of sustaining its present life.

The freezing point of water is affected by various circumstances, such as pressure and ingredients held in solution by liquids. With an increase of pressure on a liquid the freezing point is lowered, and it is raised by a removal of pressure. Bodies of water holding salts in solution, as is the case in the ocean and many lakes, freeze at a lower temperature than pure water. The freezing point of sea water is about 28° Fahr., varying somewhat with its saline ingredients and the atmospheric pressure. Water at perfect rest and not containing dust particles requires a lower temperature to be congealed into ice, since in that state it more effectually retains its latent heat, but it is influenced to some extent by the depth. In freezing, the saline matters are separated from the salty water, hence fresh and pure water may be procured by melting the ice.

The formation of ice has a marked effect in disintegrating rocks and stones. This is due to the circumstance that water fills the cavities and pores, and the expansion which results in freezing causes particles or even large pieces to break off the main body. The largest masses of ice occur in nature in the form of glaciers and icebergs, and in their clefts the deep blue of pure ice is most beautiful.

Ice formed in nature and by artificial processes is an important article of commerce, and is transported in large quantities for general consumption. Ice-cutting tools for harvesting the ice of rivers and ponds are numerous. The ice is cut into large blocks by an ice plane, which is usually moved by one or two horses. These blocks are cut about two feet wide and four feet long, though this depends somewhat upon the thickness, about eighteen inches being preferred. After the blocks are cut they are severed from each other and loaded in wagons to be transferred to an ice house, in which the ice is preserved for consumption. The ice houses usually have two or three walls, between which are spaces of dead air, and the ice is packed in sawdust or spent tan bark.

Manufacture of Ice. The manufacture of ice is an important industry in countries where it does not form in nature. It is made in vast quantities even in moderately cold climates, but especially in the large manufacturing establishments where perishable articles are produced, such as packing houses and canning factories. This enterprise began to develop about 1850, but the industry assumed extensive proportions only within recent years. The process involves lowering the temperature below the freezing point by permitting pure ammonia liquid to expand within iron pipes that are coiled in tanks filled with salt brine, from which the heat is drawn by the ammonia in evaporating. The machines consist generally of a congealer, in which the evaporization of the ammonia takes place; a pump for aspirating the gas as it forms in the vaporator; and a condenser. In the condenser the gas is compressed by a pump, the liquefaction being aided by a condensing stream of cold water, and by this means the ammonia is restored to its original state, being used successively for the same purpose. Cans filled with pure water are set into the brine tanks and there are frozen. The cans contain from 100 to 300 pounds of ice. Another plan is to produce the ice in plates or sheets, in which form it is generally known as plate ice. It is obtained in this form from pure water in sheets about eight by twenty feet in size, and with a thickness of ten to fifty inches. When frozen and reduced to a comparatively low temperature, the plates are cut into blocks suitable for transportation. It requires from five to ten days to form plate ice of these dimensions, the time depending somewhat upon the outside temperature. In some factories sulphurous oxide is utilized instead of ammonia, and the brine is made of magnesium chloride instead of salt. Scientists have perfected machinery for the production of liquid air (q. v.), which may take the place of ice in refrigerators and for other purposes, but at present its production is too expensive for commercial use. See **Refrigeration.**

ICEBERG (īs'bĕrg), a large mass of ice, usually floating in the ocean, but sometimes located on the shores or on breakers. These phenomena arise from glaciers that move through channels, from which, when they reach the shore of the sea, large masses glide into the ocean, thus forming icebergs. They are seen both in the northern and southern seas in latitudes between 68° and 70°, but increase as we proceed toward the poles, finally merging into the frozen seas which inclose the polar region. Icebergs rarely drift nearer the Equator than 40° N. and 39° S., owing to their melting in the warmer regions. In size they differ widely, sometimes attaining a circumference of several miles and rising to a height of 250 to 300 feet above sea level. However, only about one-ninth of their volume is seen above the surface. The bluish-green tint of the solid ice masses is very beautiful, and in their cavities fresh water often occurs from the melting ice. In some regions they are carried by winds and oceanic currents into warmer seas, where they give rise to fogs, but melt rapidly. Large masses of rocks and earth are carried by them, and they likewise transport seeds of plants and sometimes animals. Ice which covers a large portion of the sea is called an *ice field,* a small field is designated a *floe,* and a field which is broken up forms an *ice pack.* Field ice covers a vast portion of the sea in winter, but it is broken up on the approach of summer.

ICELAND (īs'la̤nd), an island of volcanic origin, situated in the North Atlantic Ocean, about 230 miles southeast of Greenland and 600 miles west of Norway. The area is 39,756 square miles. It is 300 miles long from east to west, with a central breadth of 200 miles. Its coast lines are indented by great bays or fiords, and adjacent to it are many small islands. The surface is diversified by several mountain chains, a number of which contain active volcanoes. Numerous lakes abound and many streams penetrate through the valleys, of which the Thjorsa, Skja Danda, Jökulsa, and Axarfirdi rivers are the most important. Geysers are distributed in many portions, but are found most numerously in the southwestern part, near Reykjavik. Sulphur is the most abundant mineral, but it has workable deposits of rock crystal, chalcedony, refracting spar, and brown coal.

The climate of Iceland is extremely cold, but mild considering the latitude, while the summers are short and damp. Vegetation abounds only in narrow confines, mostly along the coast, and the timber is limited to several stunted species, the principal tree being the birch. Other plants include the willow, bilberry, heath, and lichens. Nutritious grasses of different kinds mingle with the shrubs and afford good grazing for sheep. The manufactures are largely of a domestic nature, such as earthenware, clothing, utensile, leather, and canned fish. The principal imports include breadstuffs, timber, hardware, clothing, sugar, and tobacco. Among the chief productions are cattle, sheep, potatoes, radishes, vegetables, horses, and ponies. The exports include seal skins, sulphur, wool, cattle, fish, eider down, and the edible Iceland moss.

The inhabitants are of Scandinavian origin and speak the oldest form of the Scandinavian group of languages. Their literature is extensive. It has been enriched by translations from many master productions of German and English writers. The *Sagas* are histories and works of a romantic character, and have been translated into various languages, forming at present an interesting portion of reading matter for schools in many countries.

The government is administered under a constitution adopted in 1874. It is vested in the governor general, who is appointed by the King of Denmark, and in the althing or parliament. The latter is the local legislative body. It consists of thirty-six members, six members being nominated by the King of Denmark and forming the upper division, and the remainder, or lower division, being elected by popular suffrage. Practically all the people belong to the Lutheran Church. The educational institutions include elementary schools, several colleges, and a university at Reykjavik. This city, located in the western part, is the most important seaport and the capital of the island.

The history of Iceland begins with the end of the 8th century, when scattered settlements were made by Irish emigrants. Shortly after people immigrated from the Scandinavian countries, and in 870 Harold Haarfager by his arbitrary rule caused many Norwegians to emigrate to Iceland. By 925 the coast regions were largely populated and an aristocratic republic was formed, which maintained itself through several centuries. In 981 Christianity was introduced, schools were established, and considerable advancement was made in agriculture, commerce, and other civilized arts. At that time Iceland attained to its highest degree of prosperity. Within that period Greenland was discovered, in 983, and North America was visited under Lief Ericsson about 1001. Magnus VI. of Norway annexed Iceland to his dominion in 1264. In 1380 it was made a territory of Denmark, and since then has remained a Danish possession. Population, 1922, 98,685.

ICELAND MOSS, the name of several species of lichens found in cold climates, so named from its wide distribution in Iceland. It is widely distributed in Northern Europe, especially in Norway, and is found on the upper parts of many elevated mountains. Iceland moss is gathered as a food by the inhabitants of Iceland and Lapland, and is either boiled with milk or the plant is dried and used in making bread. To render it palatable and remove a bitter taste, it is necessary to steep it in water. It is important in the manufacture of sizing paper, in dressing warp in weaving, and as a diet for those suffering of pulmonary diseases.

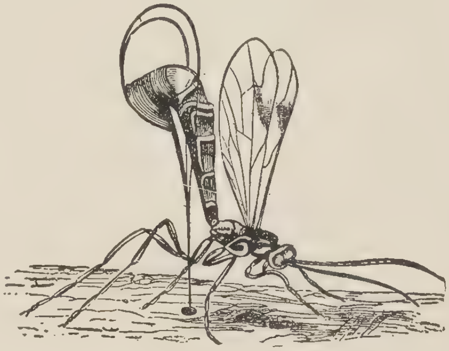
ICELAND SPAR, a transparent variety of calcite, so named from the fact that the best specimens are obtained from Iceland. Being transparent and having a double refraction property, it is employed in optical instruments.

ICE PLANT, the name of an annual herb native to Africa and Europe, so named because the leaves are covered with vesicles that appear like crystals of ice. Several hundred species have been described and all of them are native to moderately warm climates. A few of the plants have been introduced in California, where they are cultivated for their flowers. The natives of the Madeira Islands use the seeds as food, and the ashes of the plant yields carbonate of soda, useful in making glass and soap.

ICE PLANT.

ICHNEUMON (ĭk-nū′mŏn), a genus of carnivorous animals which belong to the civet family. They are noted for their destruction of rats, mice, reptiles, and insects. They are especially fond of the eggs of crocodiles, on account of which they were held sacred among the Egyptians. The best known ichneumon is found in Egypt and a smaller kind is native to India. Several of the species are kept as useful domestic animals in many homes of Egypt and Asia, serving to destroy pests. The Egyptian ichneumon is somewhat larger than a cat. It is yellowish-brown in color and has a long tail. This species is popularly known as *Pharaoh's rat,* while the Indian ichneumon is now commonly called *mongoose.*

ICHNEUMON FLY, an insect of a large group of *Hymenoptera,* including about 5,000 known species. They deposit their eggs either on the bodies or within the eggs of other insects and spiders. The larvae devour the eggs, insects, or animals, either mature or immature, in which they are developed. When the insect reaches maturity, the worm on which it fed expires from exhaustion, and the fly begins to feed on the juices of plants. In this way they are of vast benefit to man, since they destroy grubs, caterpillars, the Hessian fly, and other pests, while they themselves are harmless in a state of maturity. The adult ichneumon does not attack insects, except to make a deposit of eggs, which it does by making a minute puncture.



ICHNEUMON FLY.

ICHNOLOGY (ĭk-nŏl′ȯ-jy̆), the branch of science which treats of fossil imprints. The rocks bearing fossil footprints or other impressions are found largely in deposits which were in the form of mud at the time imprints were made, but many occur in sandstone. The Jura-Trias sandstones of North America contain many trails, tracks, and other impressions, especially of birds, fishes, and ornithopod dinosaurs, all of which have been studied systematically. See **Fossils.**

ICHTHYOLOGY (ĭk-thĭ-ŏl′ȯ-jy̆), the branch of zoölogy that treats of fishes. Aristotle is the most eminent ancient authority on this science, and is practically the only writer of antiquity to furnish data of value regarding fishes, their habits, and their culture. Modern treatises on ichthyology date from the middle of the 16th century. Among the most eminent writers are Max-Müller, Agassiz, Cuvier, Owen, and Pierre Belon (1518-1564). See **Fish Culture.**

ICHTHYOSAURUS (ĭk′thĭ-ȯ-sa̤′rŭs), a remarkable fossil reptile which inhabited the sea in the period when the secondary strata were deposited. The form was somewhat like that of the porpoise. It had four paddlelike limbs, an enormous head, a long tail, and broad vertebrae, the last mentioned resembling those of fishes. Fossil remains of this animal occur from the lower Lias to the Chalk periods, but they are most numerous in the Lias Oölite. More than thirty species have been discovered, some resembling the gavial of the Ganges and others the common crocodile. They are represented in the deposits of Australia, Europe, Asia, and South America. Only one species, the Baptanodon, is found in North America.

FOSSILS OF THE ICHTHYOSAURUS.

ICONOCLAST (ī-kŏn′ȯ-klȧst), the name given in the 8th century to one who supported a movement against the religious use of images. Those who worshiped images were called *iconolaters* and they became particularly numerous in the Eastern church. At first images of bishops and martyrs were used to commemorate their lives, but later they were worshiped and incense was offered to them on altars. Leo III., Emperor of Byzantium, promulgated an order against the worship of images, and directed that pictures and other movable objects should be placed sufficiently high so as to prevent people from kissing them and showing other marks of devotion. In 842 a council at Constantinople sanctioned the worship of images in the Greek church, and this order was subsequently affirmed by other councils. Similar decisions were made by the popes, hence image worship became established and has since been practiced in the Western church. Iconoclasm became quite general in some sections of Europe during the Reformation, when many sacred statues and images were destroyed. During the time of Cromwell it reached its height in England.

ICTINUS (ik-tī′nus), an architect of ancient Greece, who flourished in the time of Pericles. He designed and in connection with Callicrates built the Parthenon at Athens, which was finished in 438 B. C. Subsequently he built the Temple of Apollo Epicurius at Phigalia in Arcadia and a temple at Eleusis, but the latter was destroyed by Alaric in 396 A. D. His architecture was chiefly in the Doric order.

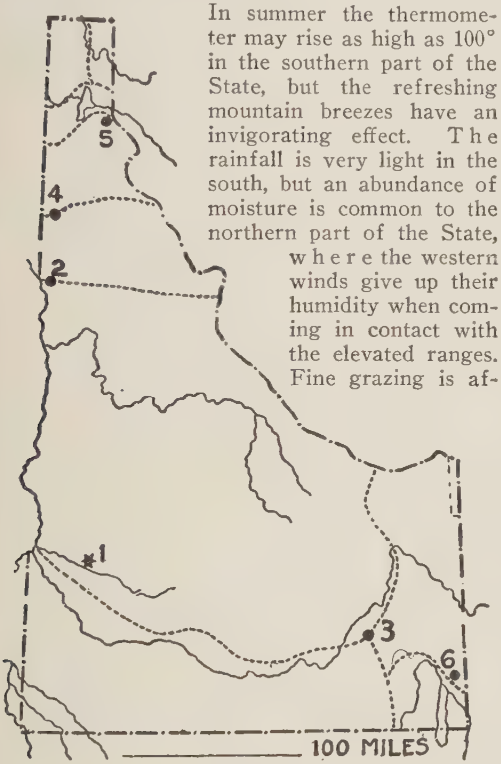
IDA, a mountain range of Asia Minor, forming the southern boundary of the Troad. It extends from Phrygia into Troad and overlooks the valley of Troy. Mount Gargarus, height 5,745 feet, is the culminating peak. This range of mountains is celebrated in ancient mythology as the place from which the gods witnessed the battles of the Trojan War. The highest peak of the mountain chain that trends the island of Crete from east to west is known by the same name. It is covered by beautiful forests of maple, cedar, and pine, and is noted for its alleged connection with the education of Zeus, the chief Grecian god. Its height above sea level is 8,050.

IDAHO (ī′dȧ-hō), a northwestern state of the United States, so called from the Indian language, the name meaning Gem of the Mountains. It is bounded on the north by British Columbia, east by Montana and Wyoming, south by Nevada and Utah, and west by Oregon and Washington. The length from north to south is 490 miles and the width varies considerably, being 45 miles at the northern boundary and about 300 at the southern. It has an area of 84,800 square miles, including 510 square miles of water surface.

DESCRIPTION. The State consists chiefly of an elevated and mountainous region. It lies mainly between the Cascades on the west and the Rocky Mountains on the east, and a large part of the southern portion is in Great Basin, which has an elevation of from 2,000 to 5,000 feet above sea level. Many mountain summits in the northern and eastern parts are elevated above the snow line. The Bitter Root and Salmon River ranges are highest near the eastern border, but spurs extend from them in a westerly direction almost across the State. In the northern part are the Cabinet and Coeur d'Alene ranges, which extend to the border of Canada, and the Blackfoot and Snake River ranges are in the southeastern part. Many of the valleys lying between the ranges have a soil of great fertility, though much of the surface is made up of regions of canyons and sandy and rocky formations.

Though the State has many streams of considerable size, the drainage is almost exclusively into the Columbia, which receives the inflow from the Snake, Clark Fork, Spokane, and Kootenay rivers. The Snake, which is the largest of these rivers, flows through the south central part, forms a part of the western boundary, and near Lewiston enters the State of Washington. It drains a basin of about 60,000 square miles and receives the inflow from the Salmon, Boise, Wiser, and Clearwater rivers. In its course are the three falls known as the Salmon, the Shoshone, and the American, the first mentioned having a descent of nearly 200 feet. A small portion in the southeastern part of the State is drained into Bear Lake and Great Salt Lake, the former of which is situated partly in Idaho. Several lakes are located in the northern part, including Coeur d'Alene, Kaniksu, and Pend Oreille. The two last mentioned discharge by the Clark Fork into the Columbia near Waneta, Canada.

While the latitude of Idaho corresponds to that of Switzerland and France, its climate is milder than that of Ohio. It is influenced very materially by the differences in altitude, which ranges from about 2,000 feet in the southern part to 12,500 feet in the higher regions of the Rocky Mountains. The more elevated parts are characterized by a severe climate and a heavy snowfall in winter, but the plains and valleys are exceptionally free from extreme. The mean temperature at Boise City is 51°, and in the moderately elevated parts in the north it is 54°. In summer the thermometer may rise as high as 100° in the southern part of the State, but the refreshing mountain breezes have an invigorating effect. The rainfall is very light in the south, but an abundance of moisture is common to the northern part of the State, where the western winds give up their humidity when coming in contact with the elevated ranges. Fine grazing is afforded on the uplands. In many places are valuable forests of evergreen and deciduous trees, especially along the streams and in the mountains.



IDAHO.

1, Boise; 2, Lewiston; 3, Pocatello; 4, Moscow; 5, Wallace; 6, Montpelier. Chief railroads are indicated by dotted lines.

Mining. The mineral resources are of great importance. Gold was first discovered about 1861, and this mineral is distributed in nearly all parts of the State. Placer mining has been conducted to a considerable extent, but quartz mining has been developed to a high degree of prominence. Silver and lead are obtained in the Coeur d'Alene district, which is one of the richest in the United States. Dredging for gold is conducted chiefly in the bed of the Snake River and its tributaries, and quartz mining has been developed in several localities, especially in the Thunder Mountain district. Other minerals include coal, iron, salt, soda, magnesia, and quicksilver. The annual output of all the mines has a value of about $35,500,000.

Agriculture. Though much of the State is arid and not capable of being reclaimed, much has been done in developing the agricultural resources. The valleys and many of the uplands have a rich alluvial soil that produces excellent crops of cereals, fruits, and vegetables. Farming can be carried on without irrigation in the northern part. The Snake River and a number of other streams have deep channels, hence irrigation is not possible the entire length of these streams, or is quite expensive in some sections. However, much has been done in reclaiming fertile but arid tracts, and in such regions farming is highly profitable. Hay and forage take rank among the principal crops, and particular attention is given to the cultivation of alfalfa. Wheat is the most important cereal and holds a high place both in the quantity grown per acre and in its quality for making flour. Other cereals include corn, oats, barley, rye, and spelt. Apples and prunes are cultivated profitably and all kinds of vegetables thrive.

The pasture lands cover an area of 25,750,000 acres, and the grasses are peculiarly nutritious. Live stock is kept on the elevated table lands during the summer, and in winter it is withdrawn to the valleys along the streams, where the climate is less severe and both cattle and horses can subsist without much feeding. Sheep raising is an important enterprise of the State, and the annual production of wool has a value of about $3,750,000. Swine are not grown extensively, owing to the fact that corn is not raised on a large acreage, but large interests are vested in the rearing of mules, horses, and cattle. The Bitter Root Timber Reserve, which comprises an area of fine pine and fir forests, is located chiefly in Idaho.

Manufactures. Rapid progress has been made in manufacturing the last two decades. Since the State has about 20,000,000 acres of valuable timber, much material for manufacturing is available. To this may be added the product of the mines, which furnish large quantities of products for smelting and other industrial enterprises. Many flouring mills are operated profitably, although they are devoted chiefly to the grinding of wheat. Other manufactures include machinery, cigars, clothing, utensils, and lumber products.

Transportation. Several transcontinental railway lines pass through the State, all of which have numerous branches in different directions. The Oregon Short Line crosses the State from east to west, affording convenient transportation from Granger, in Wyoming, through the Snake River Valley. Four lines cross the northern part of the State, including those of the Oregon Railroad & Navigation Company, the Northern Pacific, the Great Northern, and the Chicago, Milwaukee and Saint Paul railroads. The total railroad lines aggregate 2,900 miles, but this is insufficient to supply the demand, since a large portion of the central part of the State is without railroad communication. Many automobile roads have been constructed and numerous telephone and telegraph lines are in operation. The export trade is chiefly with ports on the Pacific, especially through San Francisco, Tacoma, and Seattle. Gold, silver, lead, wool, lumber, hides, and live stock are the chief products exported. The imports consist mainly of manufactured articles.

GOVERNMENT. The present constitution was adopted in 1889. It vests the executive authority in the Governor and other State officials, who are elected for terms of two years by popular vote. The legislative branch consists of the senate and house of representatives, the former having 24 and the latter 60 members. Meetings of the Legislature begin in January of even years, but extraordinary sessions may be convened by the Governor. Members of both branches are elected for terms of two years by popular vote at the time and place of voting for State officers. Local judicial power is vested in justices of the peace. Each county has a prosecuting attorney, who is elected for two years. The higher courts consist of those organized in the judicial district, and the supreme court has final jurisdiction. The latter consists of three judges, who are elected for six years. Both sexes have the right to vote.

EDUCATION. The common school system is very similar to that of all other states of the Union. The school district is the territorial unit and is composed of an indefinite and varying number of families residing within its limits. A board of three trustees, elected by the qualified voters of the district, has general charge of the school property, employs teachers, and supervises locally the buildings and the school. The county superintendent, elected for two years, has general supervision of all the schools within the county, issues certificates to teachers, and stimulates professional interest by correspondence and personal contact. The State Superintendent has supervision over all the schools and the work of county superintendents. This officer prepares the courses of study for use in the schools and the questions to be used in the examinations for county and state certificates and life diplomas, the two last mentioned being issued by the State Board of Education.

The schools and public instruction are supported by a system of local taxation, which is supplemented by an income from the State fund. The latter is obtained from the lease and sale of school lands, consisting of sections 16 and 36 of the congressional townships. Only 1.5 per cent. of the population ten years of age and over were unable to read and write in 1920, a record of illiteracy smaller than that of the whole country. The University of Idaho is located at Moscow and is the chief institution of higher learning. An agricultural and mechanical college is located at Idaho Falls, two normal schools are maintained at Albion and Lewiston, and a State academy is at Pocatello. The private and denominational institutions include Saint Aloysius Academy, Lewiston; College of Idaho, Caldwell; Episcopal College, Lewiston; Saint Teresa's Academy, Boise; and an industrial school for Indian girls, Desmet. Ample provisions have been made for the care of unfortunates, and for benevolent, reformatory, and correctional purposes. An asylum for the insane is located at Blackfoot, a soldiers' home near Boise, an industrial and reform school at Saint Anthony, and a penitentiary at Boise.

INHABITANTS. The population of the State formerly consisted largely of miners and ranchers, but the development of agriculture, lumbering, and manufacturing has caused all industrial and professional classes to be well represented. About one-sixth of the people are foreign born and the male sex is considerably in excess. Boise, in the western part of the State, is the capital. Other cities include Idaho Falls, Moscow, Pocatello, Wallace, Lewiston, and Montpelier. The State has grown constantly in population since it was admitted into the Union, the growth in the last decade being 92 per cent. In 1900 its population was 161,772. This included a total colored population of 7,277, of which 293 were Negroes, 1,291 Japanese, 1,467 Chinese, and 4,226 Indians. In 1906 the population was 205,704; in 1920, 431,826.

HISTORY. Idaho was acquired by the Louisiana Purchase. The first explorations were made by Lewis and Clark in 1805 and 1806. A mission was established at Coeur d'Alene in 1842, but those who visited the region were largely hunters and prospectors. Gold was discovered in 1858 on the Oro Fino Creek, after which settlements began to develop rapidly, and on March 3, 1863, Idaho was created a Territory by act of Congress. In 1890 it was admitted to the Union as the forty-fourth State and the thirty-first under the Federal Constitution. Considerable hostility was shown against the Mormons, who formed large settlements in the southern part and for some time practiced polygamy, but in 1893 the leaders of that denomination renounced polygamy as an institution. Several strikes took place at the Coeur d'Alene mines, those of 1892 and of 1899 being the most noteworthy. As a whole the State is on a sound educational and industrial basis, and its public institutions are making rapid strides of development.

IDAHO, University of, a State institution established in 1892 at Moscow, Idaho. Free instruction is offered to students of both sexes who reside within the State and others are required to pay a nominal tuition. Five regents have general control. The courses comprise the sciences, classics, agriculture, forestry, mining, law, commerce, engineering, and military tactics. The library has about 90,000 volumes, including books and pamphlets, and the institution is endowed by a large grant of land. About 2,266 students attend, about one-half of whom are in the collegiate department. The general endowments approximate $4,000,000.

IDAHO FALLS, county seat of Bonneville County, Idaho, 50 miles north of Pocatello, on the Snake River and on the Oregon Short Line. It has grain elevators, brick yards, and saw mills. The features include the high school, Carnegie library, electric plant, and a number of churches. Population, 1920, 8,064.

IDDESLEIGH (ĭdz'lĭ), **Stafford Henry Northcote, Earl of,** statesman, born in London, England, Oct. 27, 1818; died Jan. 12, 1887. In 1885 he was made **earl of Iddesleigh.** Later he filled several important offices with success, but resigned in 1887. The University of Edinburgh made him lord rector in 1883. His publications include "Twenty Years of Financial Policy," "Lectures and Essays," and "Pleasures, Dangers, and Uses of Desultory Reading."

IDEA (ī-dē'ȧ), any product of mental apprehension or activity considered as an object of thought. Plato regarded ideas as the eternal and immaterial forms of all material things, while Kant treated them as the primitive elements of intelligence, not as products, and modified and developed the Platonic theory of innate ideas into the modern doctrine of intuitions. See **Intuitions.**

IDEALISM (ī-dē'a̤l-ĭz'm), in philosophy, the doctrine held in contradistinction to realism. According to realism three positively distinct things are implied and involved in any act of vision. For instance, in seeing a book there are the book, the image or apprehension of the book, and an apprehending mind, ego, or self. These three facts are dealt with in idealism as subjective, objective, and absolute. Subjective idealism embraces the view that the book and the image are one thing and that a modification of the mind is the only fact which is perceived. According to objective idealism the book and the mind are existences equally real or ideal, but they are regarded manifestations of an objective fact of some kind. Absolute idealism teaches that the only thing really perceived is the idea or relation, of which the mind and the book are but two terms, and to which idea or relation they owe all the reality they have. Idealism has been influenced more or less by the teachings of Plato. The modern advocates of it include Fichte, Kant, Schelling, Berkeley, Hegel, and Descartes.

IDES (īdz), a term applied by the Romans to the 15th day of March, May, July, and October, and to the 13th of the other months. Caesar's assassination occurred on the ides of March, on account of which it was an *ater dies,* or black day, when the senate did not convene.

IDIOT (ĭd'ĭ-ŏt), a person who is in a large degree destitute of intelligence, or who suffers from a condition of mental imbecility. Although the term is of Greek origin, it expresses a condition different from the idea contained in the root from which it was derived. In ancient Greece an idiot was primarily the private individual, in distinction from an educated man or one who took part in public affairs. The Spartans used the term to describe an ignorant or unlettered man, and it finally came to be applied to those who did not possess the capacity to learn. Idiocy is now regarded as an arrest of mental development, either from congenital defect or some disease occurring subsequent to birth. In idiocy the will has but partial control over the muscular system and external impressions are not readily communicated to the mind. The brain of idiots is sometimes quite regular in conformation, but in most cases it is abnormal. In many instances the forehead is depressed and flattened, sometimes receding backward from a point near the eyebrows, and in others the back part of the head is greatly enlarged. Idiots rarely live beyond the age of forty years, due probably to their inactivity or certain sensual emotions. The education of idiots received attention as early as the 17th century. At present they are classed largely with the feeble-minded, but separate institutions for the training of this class are maintained in many countries.

IDOL (ī'dŏl), an image intended to represent a divinity and as such to be worshiped. One worshiping an image is called an *idolator* and the worship is known as idolatry. However, it must be distinguished from *iconolatry,* in which the mind is directed to the Deity or saints represented, while in idolatry the things themselves are worshiped. Various forms of idolatry have been practiced from remote antiquity, the worshipers making greatly diversified things the objects of their worship, such as the sun, moon, stars, the elements, heroes, animals, and various forms of manufactures. The Phoenicians are thought to have originated the worship of heavenly bodies and objects of nature, while to the Egyptians is attributed the origin of animal worship, such as that of the sacred ibis, oxen, and ichneumon. Hero worship was general in Greece and Rome. The mythology of these peoples deals chiefly with such gods as Zeus, Jupiter, Apollo, Mars, Neptune, and many others. Idol worship has been practiced by many of the Chinese from remote antiquity, and the construction of earthen and other images of human form still prevails among them and other classes. Many of the savages prepare peculiar figures representing animals and human beings, which they adore with feelings of intense devotion. Some writers regard idolatry among the so-called heathens as a degradation of the true God, while others think it is the result of an innate longing common to the human breast and through which a knowledge of the true God is sought. Man is a worshiping being, and activity in this line is common among all peoples, whether it prevails in the worship of one God, in that of idols, the imaginary deities, or the lower forms of fetichism.

IDUN (ē'do͞on), in Scandinavian mythology, the goddess who possessed a box of apples for the gods and which gave perpetual youth to those who ate them. She was the daughter of Ivald and the wife of Bragi. When the gods began to grow old and gray, they sent Loki after her to obtain a supply of the apples, which they ate in Asgard, the home of the gods.

IDYL (ī'dĭl), or **Idyll,** the term usually applied to a poem that represents scenes of pastoral life, or which is highly descriptive in treating one or more subjects. Theocritus, who published 31 idyls, is a famous ancient writer of this class of poems. Tennyson's "Idylls of the King" embraces twelve poems based on the romances of Arthur. They include "The Coming of Arthur," "Gareth and Lynette," "The Marriage of Geraint," "Geraint and Enid," "Balin and Balan," "Merlin and Vivien," "Lancelot and Elaine," "The Holy Grail," "Pelleas and Ettarre," "The Last Tournament," "Guinevere," and "The Passing of Arthur."

IGNATIEFF (ĭg-nä'tyĕf), **Nicholas Paulovitch,** soldier and diplomat, born in Saint Petersburg, Russia, Jan. 29, 1832. He descended from a prominent military ancestry, secured a liberal education, and served as colonel in the Crimean War. In 1858 he was sent on a special mission to Khiva and Bokhara, was created major general soon after, and in 1860 was made ambassador to Pekin. He became minister at Constantinople in 1864. During his administration he secured an enlargement of Russian influence in the Ottoman Empire and at the same time won the favor of the Christian subjects of the Porte. He was succeeded by Prince Lobanoff in 1878, was dismissed from service in 1882 as minister of the interior for allowing Jewish persecution, but subsequently became governor general of Irkutsk. Both as a soldier and diplomat he exercised much skill in extending the influence of Russia. He died July 4, 1908.

IGNATIUS (ĭg-nā'shĭ-us), **Saint,** bishop of Antioch, surnamed Theophorus, one of the apostolic fathers. His life is largely unknown, but it is thought that he became bishop in 69 A. D. and that he was a disciple of Saint John. He is regarded one of the most pious of early Christians, and it is certain that he taught lessons of great humility. Domitian persecuted the Christians at Antioch, and during all that period Ignatius showed himself a courageous follower of the Master. After a time he was condemned by Trajan to be taken as a prisoner to Rome and devoured by wild beasts, his death occurring about 110 A. D. He wrote a number of works on Christianity, including epistles to the Romans and Ephesians.

IGNEOUS (ĭg'nē-ŭs), the term applied in geology to rock which is formed by the action of heat intense enough to produce fusion, including such as basalt, lava, and granite. Rocks of this class occur with formations of different geological ages, on account of being forced up from below the surface. They prevail in an unstratified condition.

IGNIS FATUUS (ĭg'nĭs făt'ū-ŭs), a Latin term applied to a luminous appearance in the atmosphere a few feet above the ground in marshes, burial grounds, and other places where there is vegetable or animal matter in a state of decay. It appears to recede when approached. The cause is thought to be the escape of gaseous substances liberated from decaying bodies, which ignite spontaneously by a union of different forms of gases. Common names applied to this phenomenon are *Jack-o'-lantern* and *Will-o'-the-wisp.* The best examples of it are found in the marshes of Ireland and the low regions of Germany near the North Sea.

IGORROTE (ē-gôr-rō'tȧ), a race of people native to the Philippine Islands. The Igorrotes are a mixture of Malay and Mongol races and may be classed as warlike. They are found chiefly in the island of Luzón, but the term is applied generally to any uncivilized Filipinos of Malay blood, such as the Ygolots.

IGUANA (ĭ-gwä'nȧ), a genus of lizards native to tropical America, including about a hundred species. The common iguana is from two to five feet long and is mostly of a greenish color. Natives consider the flesh edible, but it is not particularly wholesome. The female lays from four to six eggs in the sand, where they are incubated by the sun. The eggs are hunted by the natives and form a wholesome food. In the adults the claws are sharp, enabling them to crawl on trees. They paddle through the water with a rapid, serpentine movement, being aided by the long, flat tail. They feed largely on vegetable substances, such as fruits, fungi, and tender plants. The *spiny agama,* an allied animal about seven inches long, is native to South Africa.

IGUANA.

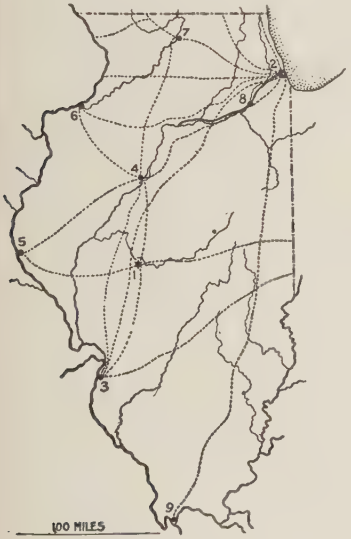
IGUANODON (ĭ-gwä'nō-dŏn), an extinct lizard of immense size, so called from the similarity of its teeth to those of the iguana. Fossil remains indicate that the fore feet were comparatively small and the hind ones were large. While walking the animal moved largely on its hind legs. Fossil remains have been found in the British Isles and other European countries, and from them it is held that the animal was between twenty and forty feet long. These animals are represented in North America by the Laosaurus and the Camptosaurus, of which remains are found in the Mesozoic deposits.

ILIAD (ĭl′ĭ-ạd). See **Homer.**

ILION (ĭl′ĭ-ŭn), a village of New York, in Herkimer County, twelve miles southeast of Utica, on the West Shore and the New York Central railroads. It is located on the Mohawk River and the Erie Canal. The surrounding country is fertile. It has manufactures of bicycles, firearms, clothing, and machinery. Electric lights, waterworks, and a public library are among the general utilities. It has considerable trade in farm produce and manufactures. Ilion was settled about 1816 and its incorporation dates from 1852. Population, 1920, 10,169.

ILLIMANI (ēl-yē-mä′nē), **Mount,** a lofty peak of the Andes, situated in Bolivia, about 25 miles southeast of La Pas. The summit is 21,040 feet above sea level. Vegetation ceases at about 11,400 feet and the snow line is 14,900 feet above the sea. In its vicinity are rich deposits of minerals and fine forests.

ILLINOIS (ĭl-lĭ-noi′), a state of the United States, one of the north central section, popularly called the *Prairie State.* It is bounded on the north by Wisconsin; east by Lake Michigan, Indiana, and Kentucky; south by Kentucky; and west by Missouri and Iowa. It is separated from Iowa and Missouri by the Mississippi, from Kentucky by the Ohio, and partly from Indiana by the Wabash River. The length from north to south is 376 miles, and the greatest breadth is 212 miles. The area is 56,650 square miles, including a water surface of 650 miles.



ILLINOIS.

1, Springfield; 2, Chicago; 3, East Saint Louis; 4, Peoria; 5, Quincy; 6, Rock Island; 7, Rockford; 8, Joliet; 9, Cairo. Chief railroads are shown by dotted lines.

Description. The surface is largely a gently undulating plain, containing practically no waste lands, and constituting an extensive fertile area. Next to Delaware and Louisiana, it is the most level State, though the surface is made up of broad valleys and low, smooth hills. In the southern part the altitude is 300 feet above sea level, whence it rises gradually toward the north, where the general elevation is 800 feet. The highest land is in the south central part, where a spur of the Ozark Mountains extend into it from Missouri, having an altitude of 1,150 to 1,400 feet. In this section the hills are more or less abrupt, especially on their northern slopes, and the descent southward to the Ohio is quite gradual. The general slope of the State is toward the south and southwest, which is the direction of nearly all of the larger streams.

Since the State borders on Lake Michigan and the boundary is formed in part by the Wabash, Ohio, and Mississippi rivers, it is supplied with important waterways for transportation. The three rivers mentioned receive the discharge from nearly all streams within the State. The Illinois River, which is formed by the junction of the Des Plaines and the Kankakee, drains the central part of the State, and discharges into the Mississippi. It receives the inflow from the Sangamon, Mackinaw, Vermilion, Spoon, Fox, Kankakee, and Des Plaines, and through the last mentioned has connection with the Chicago Drainage Canal. The Rock River is in the northern part, and the Embarras, Little Wabash, Kaskaskia, and Big Muddy drain a large portion of the southern section. Lake Peoria, formed by an expansion of the Illinois River, is in the central part of the State. Grass and Fox lakes are in the northeastern part, and a number of other lakes are located in the vicinity of Chicago.

Climate. The climatic conditions are temperate, the mean temperature ranging from 46° to 54°. The summers are pleasant and marked by cooling breezes, while the winters are moderate, though the thermometer occasionally falls below zero. In the southern part the climate is considerably warmer than in the northern section, but in general the State is subject to marked changes in temperature. Vegetation begins to grow in the early part of April, which is the principal month for seeding, and the first frosts occur late in September. All parts of the State have an abundance of rainfall, which averages 38 inches, but is somewhat heavier in the south than in the north. As a whole the climate is healthful and favorable to agriculture.

Mining. Though mining has been developed to a considerable extent, it is surpassed in importance by agriculture and manufacturing. In the output of bituminous coal Illinois takes high rank, and the total mined is equal to ten per cent. of the amount produced in the entire country. The coal area is estimated at 42,500 square miles, most of which is workable, and the deposits are south of a line drawn through Rock Island and Joliet. Several veins of marketable coal are located from 80 to 1,200 feet below the surface, ranging in thickness from three to nine feet, but most of the mines now operated do not exceed a depth of 400 feet. The annual output of coal is about 84,500,000 tons, making the State third in the coal industry, being exceeded by West Virginia and Pennsylvania. Zinc is obtained in the northern part and sandstone, limestone, and commercial clays are abundant in nearly all sections. Petroleum is obtained in the southeastern part and galena, a lead ore, is worked in the northwestern section. Gypsum and limestone are abundant. The State ranks first in fishing among the inland states.

MANUFACTURING. Illinois ranks third as a manufacturing State, being exceeded only by New York and Pennsylvania. This favorable condition is accounted for largely by its extensive coal fields and convenient location for collecting and distributing. Fully seventy per cent. of the manufactured products of Illinois are credited to Chicago, which is the most important meat-packing center of America. All parts of the slaughtered animal are utilized, hence a number of industries have developed aside from the enterprise of producing fresh, cured, and canned meats. These include principally the manufacture of leather, soap, candles, brushes, and lard and tallow products. South Chicago and Joliet are centers for the manufacture of iron and steel products, the ore being obtained from the mines of Minnesota and Michigan. Elgin and Aurora are noted for the manufacture of watches and clocks; Moline, Dixon, and Rock Island have extensive factories of agricultural implements; and Peoria has packing and milling interests. Other manufactures include clothing, musical instruments, electrical apparatus, flour, lumber products, bread, candy, automobiles, railway cars, and earthenware. Among the manufactures depending for raw materials upon agriculture are cheese, butter, and condensed milk. About twenty per cent. of the corn crop of the State is consumed in manufacturing enterprises, including chiefly glucose and food products.

AGRICULTURE. The farm acreage embraces 92 per cent. of the land area and agriculture is the leading industry. In the volume of farm products the State long held first rank and at present it is exceeded only by Iowa. The soil is exceptionally rich and free from stones. Much of the surface has been improved by tile drainage and the cultivation of crops which invigorate the land, such as clover. Aside from stable manure, only a small quantity of fertilizers is employed, and the methods of farming are modern and progressive. Corn is the principal cereal, the annual production ranging from 350,000,000 to 410,000,000 bushels. Oats is the second crop of importance, hay the third, and wheat the fourth. Considerable quantities of potatoes, rye, barley, and spelt are produced. Fruit, though grown in all sections of the State, is especially abundant in the southern part, where both the soil and climate are favorable to the endurance of orchards for a long term of years. The chief varieties grown generally are grapes, apples, plums, strawberries, and cherries, and pears, quinces, and peaches thrive best in the central and southern parts. Formerly heavy belts of timber extended along the streams and through the valleys of the southern section, but a large part of the area formerly in forests are utilized for farming and pasturage, though considerable valuable timber still abounds along the streams and in artificial groves.

Although Illinois is located near the great markets of Chicago, Peoria, and Saint Louis, stock raising has continued to be an important industry. This is accounted for largely by the fact that agriculturalists appreciate the value of feeding their hay and grain upon the farms as a means to maintain the fertility of the soil. In the number of milch cows Illinois is exceeded only by Iowa and New York. Though all departments of dairy farming are well developed, fully 65 per cent. of the income is obtained from the sale of milk. Large quantities of swine and cattle are fattened for the market each year. The State ranks among the first in the number of horses, and particular attention is given to the rearing of well-blooded animals. In the number of domestic fowls it ranks next to Missouri. Mules and sheep are grown profitably, though there has been a noticeable decrease in the latter for several decades.

TRANSPORTATION. Illinois is exceeded only by Texas in railroad mileage, the lines aggregating 12,076 miles. It likewise holds high rank in the mileage of electric railways, both urban and interurban. Chicago, located at the terminus of many lines articulating in all directions, is the greatest center of railways in the world. The lines that cross the State include the Chicago and Alton, the Chicago, Burlington and Quincy, the Chicago and Northwestern, the Chicago, Milwaukee and Saint Paul, the Chicago Great Western, the Chicago, Rock Island and Pacific, the Illinois Central, the Wabash, and the Atchison, Topeka and Santa Fé, all of which furnish extensive communication toward the southwest, west, and northwest. The Erie, the Nickel Plate, the Wabash, the Pennsylvania, the Baltimore and Ohio, the Monon, the New York Central Lines, and the Grand Trunk furnish the principal connections toward the southeast, east, and northeast. Rock Island, Alton, East Saint Louis and Cairo are the principal cities of the Mississippi. Peoria, Springfield, and Bloomington are thriving inland cities. Chicago, on Lake Michigan, is the largest inland port city of the world. Lake Michigan is connected by the Illinois and Michigan canal with the Illinois River at Lasalle. It is probable that the Chicago Drainage Canal will eventually become a ship canal.

EDUCATION. The educational institutions take a high rank and include some of the finest schools of America. Free schools have been maintained since 1855. The rate of illiteracy is 3.4 per cent. of the population over ten years of age, as compared with 6.0 for the entire country. The system of schools is under the supervision of a State superintendent, who is assisted by superintendents in the cities and counties. All the rural communities have district schools, the terms ranging from seven to nine months per year, and township high schools may be organized where the people vote to establish them. The University of Illinois, located at Urbana, is at the head of the school system. Five normal schools are maintained for the instruction of teachers at Carbondale, Charleston, De Kalb, Macomb, and Normal. A noted training school, the Chicago Normal School, is situated in Chicago. About 35 institutions that are classed as colleges and universities are within the State, all of which carry representative courses of study and are liberally patronized. Among these may be mentioned the Northwestern University, Evanston; the Illinois Wesleyan College, Bloomington; the University of Chicago, Chicago; the Augustana College, Rock Island; the Lincoln University, Lincoln; the Knox College, Galesburg; the Illinois College, Jacksonville; the Armour Institute of Technology, Chicago; the Concordia College, Springfield; the Lake Forest College, Lake Forest; and the Monticello Seminary, Godfrey.

Illinois maintains a high class of correctional and charitable institutions. It likewise has several hospitals and homes for the care of soldiers' orphans and for the soldiers and sailors of the wars. The correctional institutions include a penitentiary at Joliet, a reformatory at Pontiac, a home for juvenile female offenders at Geneva, and a prison at Chester. Others include the Soldiers' Orphans' Home at Normal, the Soldiers' and Sailors' Home at Quincy, the Soldiers' Widows' Home at Wilmington, hospitals for the insane at Elgin, Jacksonville, Anna, Bartonville, Watertown, and Kankakee, and institutions for the blind and the deaf and dumb at Jacksonville and Chicago. Many scientific and educational societies are in a flourishing condition, most of which are centered in Chicago, and reference and reading libraries are maintained in all the towns and cities.

Government. The present constitution was ratified by a vote of the people in 1870. By it the chief executive authority is vested in the Governor, who is elected for a term of four years by popular vote. The other State officers include the lieutenant governor, auditor, secretary, treasurer, attorney general, and superintendent of instruction, who are elected for four years, except the treasurer, who is elected for two years and cannot be reëlected to succeed himself. Legislative authority is vested in the General Assembly, which consists of a senate of 51 members elected for four years and of a house of representatives of 153 members elected for two years. In voting for representatives each elector is allowed three ballots, which he may cast for one candidate, or he may cast one and a half ballots for each of two candidates, or he may cast one ballot for each of three candidates. This provision works to the advantage of the minority party. Local judicial jurisdiction is exercised by police magistrates and justices of the peace. Counties having a population of more than 50,000 inhabitants may have probate courts, but each county has a judge, a clerk of courts, and an attorney, all being elected for four years. In addition there are circuit and inferior appellate courts. The highest judicial authority is vested in the supreme court, constituted of judges from seven districts, who are elected for terms of nine years.

Inhabitants. About one-fourth of the inhabitants are of foreign birth, this portion in 1920 numbering 966,747. Germans of foreign birth constitute over one-third of the foreign born population and next in order are the Scandinavians, Irish, and Slavs. More than half of the people reside in cities and towns. The density of population is 86 per square mile. All of the leading Christian denominations are well represented, including principally the Methodist Episcopal, Lutheran, Baptist, Roman Catholic, Christian, Presbyterian, and Episcopalian churches. The United Brethren and Congregational sects likewise have a large membership. Springfield is the capital of the State. Other important cities are Chicago, Peoria, Quincy, Rockford, Bloomington, Aurora, Elgin, Galesburg, Belleville, Decatur, Rock Island, East Saint Louis, Jacksonville, Danville, Moline, Alton, Cairo, Streator, and Freeport. In 1920 Illinois held the third rank in population among the states, being exceeded only by New York and Pennsylvania. In 1910 the population was 5,638,591. This number included 86,677 colored inhabitants, of whom 85,078 were Negroes. Population, 1920, 6,485,098.

History. Illinois was first visited by white men in 1673, when Louis Joliet and Father Marquette ascended the Illinois River, and by way of the Des Plaines and Chicago rivers reached Lake Michigan. In 1680 La Salle and several companions erected Fort Crevecoeur on the Illinois River, and Catholic missions were established about the same time. The region came under English dominion by the conquest of Canada in 1763, when many French settlers removed to the towns in the Mississippi Valley, especially to Saint Louis and Natchez. Kaskaskia, the oldest town in the State, was settled in 1680, but it declined after the English occupation. In 1787 it was included with the Northwest Territory.

Illinois was erected into a territory in 1809, comprising at that time the region now included in the present states of Illinois, Wisconsin, Minnesota, and part of Michigan. Fort Dearborn (Chicago) was destroyed and the garrison was massacred in 1812. The first constitution was adopted and it was admitted into the Union in 1818. The Black Hawk War of 1832 terminated in the removal of all the Indians to regions farther west. Congress made appropriations for the improvement of the Chicago River in 1834. In 1840 the Mormon excitement occurred. About that time a large number of Mormons removed from Missouri to Nauvoo, Ill., and four years later Joseph and Hiram Smith were confined in the jail at Carthage and there murdered. Subsequently about 20,000 emigrated under the leadership of Brigham Young and settled in Utah. The State furnished six regiments of troops for the Mexican War. The Illinois and Michigan Canal, from Lake Michigan to Lasalle, was opened for traffic in 1848. A great fire destroyed a large part of Chicago in 1871, but it was rapidly rebuilt, and in 1893 was the seat of the World's Columbian Exposition. The capital was located successively at Kaskaskia, Vandalia, and Springfield. At the time of the Civil War Illinois furnished 260,000 men to support the Union. It has since made rapid strides of advancement in wealth, commerce, education, and influence in the national government.

ILLINOIS, University of, an educational institution situated both in Champaign and Urbana, Ill. It was established in 1867 as the Illinois Industrial University and assumed the present name in 1885. At first the institution was open for men only, but women were admitted as students in 1870. It consists of the six colleges of law, agriculture, literature and arts, science, engineering, and medicine. Courses are maintained in military science, art and design, music, pedagogy, and preparatory work. It has 50 buildings, 1,226 instructors, and about 12,000 students, of whom about one-fourth are of the undergraduate college. The library contains 500,000 volumes. The buildings and grounds are valued at $5,250,000.

ILLINOIS AND MICHIGAN CANAL, a waterway that connects Lake Michigan with the navigable waters of the Illinois River, hence furnishes transportation facilities from the Gulf of Mexico to the Great Lakes. It extends from the south branch of the Chicago River to the Des Plaines, thence follows that stream to the mouth of the Kankakee, and thence follows the valley of the Illinois River to its terminus at Lasalle. The canal is 96 miles long, has seventeen locks, and is six feet deep and sixty feet wide at the bottom. Work upon it was commenced in 1836, and it was opened for traffic in 1848, costing a total of $8,750,000. Formerly it was important as a waterway, but the construction of railways has caused it to be used very little at present.

ILLINOIS INDIANS, a family allied to the Dakotas, who formerly inhabited Illinois and tracts west of the Mississippi. They were classed with the Algonquins, constituted a brave race, and were identified with the French in their wars against various Indians, especially the Sacs and Foxes. They now occupy a small reservation in Oklahoma and have taken kindly to the arts of peace and education.

ILLINOIS RIVER, the most important river of Illinois. It is formed in Grundy County by the Kankakee and Des Plaines rivers, receives the Fox and Sangamon, and after a course of about 500 miles joins the Mississippi fifteen miles above Alton. Formerly it was navigable only to Peru, a distance of 250 miles, but it is now serviceable for vessels to points farther up by reason of its receiving the water of the Chicago Drainage Canal, which enters the Illinois River through the Des Plaines.

ILLITERACY (ĭl-lĭt'ẽr-ȧ-sȳ), the term used generally to denote inability to read and write. Although it is not important as to how many persons in any community are unable to read and write, this fact is of interest in that it marks the dividing line between those who are hopelessly ignorant of books, and are therefore deprived of all the advantages to be derived from perusal or study, and those who have at least the rudiments of an education. This standard, though marking a primitive degree in the development of culture and intelligence, is at present a dividing line to which a large majority of the people have not attained. However, the statistics exclude all who have not reached school age, which differs somewhat in the various countries, and in some cases an age limit is fixed in the census reports. For instance, the law of Italy fixes the age under which children are omitted at six years while in the United States those under ten years are not counted. Since Germany has enforced the compulsory school attendance laws a long term of years, it occupies the foremost position in the world when measured on an educational standard, although Sweden and Norway hold a very high rank in elementary instruction. Illiteracy in the United States is somewhat higher than could be expected, this being due to a large colored population. Below is a table showing the per cent. of illiteracy for the different countries.

	PER CENT.		PER CENT.
Germany	0.11	Ireland	17.00
Sweden	0.11	Austria	23.80
Switzerland	0.30	Hungary	28.10
Scotland	3.57	Greece	30.00
Holland	4.00	Italy	38.30
France	4.90	Russia	61.70
England	5.80	Spain	68.10
Canada	10.20	Portugal	79.00
United States	10.70	Servia	86.00
Belgium	12.80	Rumania	89.00

ILLUSION (ĭl-lū'zhŭn). See **Eye.**

ILLYRICUM (ĭl-lĭr'ĭ-kŭm), or **Illyria,** the name of an ancient country in Europe, which extended from the northeastern coast of Italy into Macedonia. Philip of Macedon conquered the country as far west as the Drino River and annexed it to Macedonia. The western portion comprised the territory corresponding to Bosnia, Croatia, Dalmatia, and Herzegovina, and this region remained independent until the middle of the 18th century before the Christian era, when it was made a Roman province. Illyricum was generally divided into two parts, known as *Illyris Graeca* and *Illyris Romana,* and both of these divisions were afterward incorporated with the Eastern Empire. Napoleon organized the Illyrian provinces in 1809, but they were formed into a kingdom and annexed to Austria in 1816. Later the kingdom was dissolved and the territory was subdivided into provinces, all of which are now Austrian possessions, except Albanian, which is a part of Turkey.

ILOILO (ē-lô-ē'lô), a city of the Philippines, capital of the province of Iloilo, located on the southeastern shore of the island of Panay. It has an excellent harbor on Iloilo Strait, which separates Panay from the island of Guimaras. The chief buildings include a cathedral, several schools, a seminary, and the buildings used by the government. It ranks next to Manila as a commercial center in the Philippines, and has a large trade in coffee, sugar, rice, tobacco, and dyewoods. A foundry, a machine shop, and a pottery are among the industrial enterprises. The United States bombarded and occupied the city in 1899, at the time of an insurrection. Population, 1922, 19,150.

IMAGINATION (ĭm-ăj-ĭ-nā'shŭn), that faculty of the mind by which it receives concepts of absent objects, not as they are or were, but as they might be. The original material with which it builds is derived through memory by sense perception, thus imagination is created in a limited sense. The material secured in this way is used with modification, or it may be modified and then used, and thus new images or mental pictures are created that differ from any product that memory gives. In the combining of images, or the formation of new ones, the laws of the association of ideas govern the operation, but imagination is governed at least partially by the will, for by it the thoughts are controlled to some extent and the limits are determined within which the laws of association are to act. The products of imagination are termed according to the results, as phantasmal, fanciful, artistic, and inventive. Imagination makes possible the culture of fine arts, gives vividness and force to language, lightens life's burdens, and leads to the attainment of success in the practical affairs of life. Its culture is important, since it may serve a good or evil purpose, this depending upon its early and right training.

IMAM (ĭ-mäm'), or **Iman,** a priest among the Mohammedans, one who is looked upon as a leader among the learned men. He has the ordinary care of a mosque, calls the people to prayer, and reads the prayers before the congregation. The imam is elected by the people and is ecclesiastically independent from the mufti or chief priest. Imam is the name which is applied to the founders of the four principal Mohammedan sects, but among the Shiites it refers especially to the twelve legitimate successors of Ali. The Sultan, being supreme in ecclesiastical affairs, has the title of imam.

IMMIGRATION (ĭm-mĭ-grā'shŭn), the act of coming into a country for the purpose of residing there permanently. It is closely associated with colonization, since progress in the development of a new country increases labor. Immigration is not only encouraged by the authorities of a new country, but a gain in population is considered an advantage. In the past century the over-populated states of Europe have had a constant movement of emigration to the newer portions of the world, especially to the United States, Canada, Australia, Africa, and South America. The annual immigration to Argentina is 112,000 persons and to Uruguay it is about 10,000. These countries continue to attract settlers owing to their extensive natural resources being undeveloped. In 1925 Canada received 100,895 immigrants, of which number about one-third came from the United States. Formerly the immigrants into Canada came largely from Europe, but since 1910 a constant stream of settlers moved from the United States into the new country of the Canadian west, especially to Manitoba, Saskatchewan, Alberta, and British Columbia. The newer element in general includes Galacians, Germans, Hungarians, Mennonites, Chinese, and Negroes. Australia has been receiving about 60,000 immigrants annually, who are attracted chiefly by its gold mines and fertile lands.

Immigration to the United States has varied greatly from year to year since 1850, and was smallest in 1862, owing to the progress of the Civil War. Below is a table showing the annual immigration since 1850:

PERIOD.	IMMIGRANTS.	PERIOD.	IMMIGRANTS.
1851	379,466	1881	669,431
1852	371,603	1882	788,992
1853	368,645	1883	603,332
1854	427,833	1884	518,592
1855	200,877	1885	395,346
1856	195,857	1886	334,203
1857	112,123	1887	490,109
1858	191,942	1888	546,889
1859	129,571	1889	444,427
1860	133,143	1890	455,302
1861	142,877	1891	560,319
1862	72,183	1892	479,663
1863	132,925	1893	439,730
1864	191,114	1894	285,631
1865	180,339	1895	258,536
1866	332,577	1896	343,267
1867	303,104	1897	230,832
1868	282,189	1898	229,299
1869	352,783	1899	311,715
1870	387,260	1900	448,572
1871	321,350	1901	487,918
1872	404,806	1902	648,743
1873	459,803	1903	857,046
1874	313,339	1904	815,361
1875	227,498	1905	1,027,421
1876	169,986	1906	1,215,684
1877	141,857	1914	1,218,480
1878	138,469	1920	430,001
1879	177,826	1925	294,304
1880	457,257	1928	307,255

Below is a table showing the immigration into the United States for each decade since 1821, and giving the population at the beginning of each period of ten years:

DECADE.	IMMIGRANTS.	POPULATION AT BEGINNING.
1821-1830	143,439	9,633,822
1831-1840	599,125	12,866,020
1841-1850	1,713,251	17,069,453
1851-1860	2,598,214	23,191,876
1861-1870	2,314,824	31,443,321
1871-1880	2,812,191	38,558,371
1881-1890	5,246,616	50,155,783
1891-1900	3,844,420	62,622,250
1900-1910	8,800,000	76,303.387
1910-1920	5,735,711	71,972,266

In this connection is given the following table, showing the population and foreign-born inhabitants for each year stated:

YEAR.	FOREIGN BORN.	POPULATION.
1850	2,244,602	23,191,876
1860	4,138,697	31,443,321
1870	5,567,229	38,558,371
1880	6,679,943	50,155,783
1890	9,308,104	63,069,756
1900	10,460,085	76,303,387
1910	13,515,886	91,972,266
1920	13,712,754	105,710,620

Immediately following the close of the Civil War a large number of immigrants came from Germany, Sweden, and other countries of Europe to take advantage of the cheap lands and excellent opportunities afforded by the new country in the Northwest. However, at present the largest number of foreign born are attracted to the cities. Below is given a list of eighteen cities, showing the foreign-born and native population in 1920:

CITIES.	FOREIGN BORN.	POPULATION.
New Bedford	25,529	62,442
Holyoke	18,921	45,712
Manchester	24,257	56,987
Lowell	40,974	94,969
Woonsocket	12,518	28,204
Lawrence	28,577	62,559
Passaic	12,900	27,777
Fall River	50,042	104,863
Milwaukee	88,991	285,315
Detroit	96,503	285,704
Buffalo	104,452	352,387
Saint Louis	111,356	575,238
San Francisco	116,885	342,782
Cleveland	124,631	381,786
Boston	197,129	560,892
Philadelphia	295,340	1,293,697
Chicago	587,112	1.698,575
New York	1,270,080	3,437,202

In 1920 the foreign born constituted 13.7 per cent. of the total population of the United States, of which number only about half a million were in the Southern States. The North Atlantic states had 4,762,796 of foreign birth, and the North Central states had 4,158,474. In the Western states there were 846,321. Immigration to America comes largely from Western Europe. The number of inhabitants of the United States in 1920 who came from Italy were 484,207; from Austro-Hungary, 579,042; from Russia, 807,606; from Sweden, Norway, and Denmark, 1,064,309; from England, Scotland, and Wales, 1,169,737; from Ireland, 1,618,567; and from Germany 2,666,990.

IMMORTALITY (ĭm-mŏr-tăl′ĭ-tȳ), the term employed to designate the endless life of the soul. In theology it is applied to the eternal, personal, and conscious existence and union with God. Belief in the immortality of the soul is very ancient. It implies a continuation of our personality, or consciousness, and of the will. The most rude people hold views regarding a future state, one in which the arts of this life will be pursued with even greater satisfaction than the present existence affords, a state in which nature and the chase will yield enlarged gratifications. Among the ancient Egyptians the idea of immortality led to a belief in a dwelling place of the dead and of a future judgment. Their beneficent god Osiris judged the departed, and, "having weighed their hearts in the scales of justice, he sends the wicked to the regions of darkness, while the just are sent to the god of light."

Among the early Grecians the belief was prevalent that the departed passed into the realms of light or hades, the place for the dead. Thus we read of Achilles, the ideal hero, that he declared he would rather till the soil than live in pale Elysium. Socrates discourses on the doctrine of immortality in the "Apology" and the "Phaedo," and concludes that the soul is the immaterial and superior part, and is not dispersed into nothingness when separated from the body. He thought that to study how to die calmly is true philosophy, and that the soul spends the rest of its existence with the gods, freed from the evils of humanity. The Christian religion teaches the immortality of the soul, as do also other religions, and some Christians and others hold to the belief in a state where purification of the soul takes place after death. Man is taught by reason and religion to strive for continued perfection, and that the truthful and rightful will not pass unrewarded.

IMMORTELLES (ĭm-mŏr-tĕlz′), or **Everlasting Flowers**, a term applied to a class of flowers which do not lose their color or beauty in drying. They are native to Northern Africa and Western Asia, and are cultivated extensively in gardens and greenhouses. The name immortelles was compounded in France, where they are grown extensively and used in making wreaths. In many countries wreaths made of immortelles are placed on graves to symbolize immortality.

IMPEACHMENT (ĭm-pēch′mẹnt), the calling into question of the motives of an individual or of the validity of the law. It is applied particularly to the accusation and prosecution of an officer for maladministration, by a legislative body. The proceeding is sanctioned in England, where the House of Commons is the prosecutor and the House of Lords is the trial court. Lord Latimer was the first to be prosecuted by this method. However, the proceeding is now practically obsolete.

In the United States the Constitution vests the right of impeachment exclusively in the House of Representatives, but the right of trial is vested in the Senate. The officers liable to impeachment are the President, Vice President, and all civil officers of the United States.

Among the causes for which an officer may be impeached are treason, bribery, and other high crimes and misdemeanors. In the trial by the Senate the regular officer presides, but when the President is impeached the Chief Justice of the Supreme Court is the presiding officer. A two-thirds vote of the senators present is necessary for conviction. Punishment extends only to removal and disqualification to hold any office under the Constitution of the United States, but the offender is still liable to an ordinary trial by law. Impeachments of State officers are provided for by the constitutions of the various states. In the United States seven Federal officers have been impeached, two of whom were convicted. The number embrace Senator William Blunt of Tennessee, in 1797; District Judge John Pickering of New Hampshire, in 1803; Supreme Judge Samuel Chase of Maryland, 1804; District Judge James H. Peck of Missouri, 1830; District Judge West H. Humphreys of Tennessee, 1862; President Andrew Johnson, 1868; and Secretary of War William R. Belknap, 1876. The only convictions secured were in the trials of John Pickering and West H. Humphreys.

IMPERATOR (ĭm-pê-rā'tŏr), the term applied to a military commander in ancient Rome. During the time of the republic the term imperator followed the name, but when the empire was organized it was changed to *emperor* and as a title preceded the name of the supreme ruler. The title became extinct with the fall of the Byzantine realm in 1453. Charlemagne, the founder of the German Empire, assumed the title of emperor. The term imperator was applied to triumphant generals throughout the Roman Empire.

IMPERIALISM (ĭm-pē'rĭ-al-ĭzm), the policy of territorial extension by conquest, the spirit of empire, or the system of government under an emperor or empress. The term is used in France to designate the revival of the Napoleonic empire, and in England it refers to a policy of territorial extension. In the presidential campaign of 1900, in the United States, the term was employed largely for the purpose of designating the policy of the national administration in dealing with the Philippine Islands.

IMPRESSIONIST (ĭm-prĕsh'ŭn-ĭst), the name applied to a painter of the school of painting whose aim is to produce works of art in exact accord with nature. The painters of this group are usually called *impressionists,* since they seek to reduce to the canvas an exact impression of their subjects, so they will impress the mind in a way similar to the object or scene painted. From this circumstance they are sometimes called *naturalists,* owing to the fact that they seek to reproduce according to nature. Formerly these terms applied more particularly to painters, but now they are used likewise in reference to sculpture and literature. The impressionist school of painting is concerned chiefly in rendering the effects of light and shade. The painters of this school oppose the practice of painting in the studio, because they think it gives untrue tones, but instead do their painting in full light.

IMPRESSMENT (ĭm-prĕs'mẹnt), the act of impressing into the public service, or of seizing property for public use. Formerly the power of impressment was claimed by many governments, but since the War of 1812 it has been abandoned by most countries. The British government claimed the right of searching American vessels prior to the War of 1812, and of impressing into service British seamen who were employed under the American flag. At that time England was at war with France and claimed the service of all her maritime citizens, refusing to recognize allegiance to the United States even by naturalization. The willful impressment of many American sailors was instrumental in bringing about the embargo system and the War of 1812.

IMUS (ē'mo͞os), a town of the Philippines, on the island of Luzón, in the province of Cavite. It is located a short distance from Manila Bay, about eighteen miles south of Cavite, and is surrounded by a fertile farming and fruit-growing region. The manufactures include clothing, pottery, and machinery. It has a cathedral and a number of schools. Population, 1922, 15,808.

INAGUA (ê-nä'gwȧ), **Great** and **Little,** the names of two islands in the West Indies, belonging to the Bahama group. Great Inagua, the larger of the two, is located sixty miles northeast of Cuba and has an area of 660 square miles. Little Inagua, located ten miles northeast of Great Inagua, has area of 35 square miles. The population of the two islands is 1,640.

INCA (ĭn̲'kȧ), the name of the governing class of the Peruvian Indians, and later the title of the chief or imperial head of the Empire of Peru. The Incas took rank with the Aztecs and the Mayas in the scale of intellectual and industrial advancement. Their territory extended from the Equator southward a distance of about 38°, and embraced the Andean region south of the Equator and much of the slope toward the east, extending far into the valleys of the Amazon and the Orinoco. Their capital was at Cuzco until a short time before the Spanish conquest, when it was removed to Quito by Atahualpa. At that time the Incas were highly developed in agriculture and fruit raising. They maintained a considerable commerce, manufactured clothing and implements, promoted mining, and built substantial forms of architecture. They were finally conquered by the Spaniards in 1532, when their empire had a population of about 10,000,000. Prescott, the historian, in speaking of the Peruvians, says that "they originated civil and social institutions of much perfection, possessing an indefinite power of expansion, and suited to the most flourishing condition of the empire, as well as to its infant fortune." Many relics of Incan architecture are found in Peru and other countries of South America. They constructed of adobe bricks and of stone, built aqueducts and waterways, and attained to much proficiency in embalming and entombing the dead. Many of the respected and educated people of the Andean countries of South America trace their ancestry to the Incas.

INCARNATION, the manifestation of the Deity in a human form, as in the union of God and man in the person of Christ. The doctrine is clearly stated in the first chapter of the Gospel according to John, in which Christ is spoken of as the *Word.* Here it is made clear that the Word is God, existing from the beginning, but yet in some sense He is different from God. The doctrine of incarnation is a vital part of the religion of the Hindus, who believe in many incarnations, as the nine incarnations of Vishnu.

INCENSE (ĭn'sĕns), an aromatic substance which emits a sweet odor when burned. Perfumes of this kind were used from remote times in religious rites. The substance employed consisted anciently of a mixture of gums, spices, and balsams, which form a large portion of the ingredients still used. Among the Jews incense was burned on a special altar, called the *altar of incense.* They employed it only as an act of worship, and not as a sacred offering. The worshiping of gods in ancient Assyria, Babylonia, Egypt, India, Greece, and Rome included incense burning daily, a practice usually performed in the morning and evening. It is still employed by the adherents of divers religions of Asia, especially by the Buddhists. The Greek and Roman churches both employ incense in worship, especially in the most sacred services, such as high mass, in funerals, and the consecration of churches.

INCLINED PLANE (ĭn-klīnd' plān), any plane surface that makes an angle with a horizontal surface, used for raising heavy weights. If a ball is placed upon a horizontal plane, it retains its position and presses upon the plane with its entire weight. However, as soon as one end of the plane is raised, the entire weight of the ball will not rest upon the plane and it will begin to roll toward the lower end. It is one of the machines designed to use force advantageously, as in loading a barrel of salt upon a wagon, when one end of a plank may rest upon the ground and the other upon the wagon, and the barrel may be rolled over the plank to much better advantage than in lifting it direct. Steep grades in constructing highways are avoided by building them in a winding position around a hill.

INCOME TAX (ĭn'kŭm), a tax levied upon the annual income of individuals, investments, and corporations. This form of taxation has been levied more or less extensively since mediaeval times. In 1646 the first income tax levied in America went into effect under the direction of the Massachusetts Bay Colony. Massachusetts has maintained a tax of this character during most of its history. It and a few other states still impose this class of taxes. In Great Britain the first income tax of modern times was levied in 1799, a form of taxation still existing in that country. The first income tax imposed by the United States went into effect in 1861, when a tax of three per cent. was levied on incomes of $800 per annum and over, and the following year Congress imposed an income tax of three per cent. upon the excess of incomes above $600 to $10,000, and five per cent. on the excess above $10,000. The graduated scale was somewhat revised in 1864 and in 1867, and in 1872 the law was repealed.

The total amount derived from the income tax, including some arrears, was $346,911,760.48. In 1894 Congress imposed an income tax of two per cent. upon the excess of all incomes above $4,000 per annum, and included all corporations, companies, and associations other than partnerships. On May 20, 1895, the law was declared unconstitutional by the Supreme Court of the United States. This decision was based upon the theory that, although a direct tax, it was not apportioned among the states according to population. In 1909 Congress submitted the Sixteenth Amendment to the Constitution, and it was ratified by the states in 1913. Congress passed the Underwood-Simmons Tariff Law, in 1913, which taxed all incomes of more than $3,000, including those of firms and corporations, except heads of families and married persons living with husband or wife, who were taxed on incomes of $4,000 or more. An additional, or *surtax,* was levied on incomes of more than $20,000.

In 1917 Congress passed the so-called War Revenue Act, which reduced the exemptions of heads of families and married people living together to $2,000 and the exemptions of all others to $1,000. This law greatly increased the surtaxes and levied special taxes on excess war profits, beverages, motor vehicles, perfumeries, musical instruments, and other articles of luxury. The law of 1925 reduced the normal taxes in favor of earned incomes.

INCUBATION (ĭn-kṳ-bā'shŭn). See **Egg.**

INCUBATOR (ĭn'kṳ-bā-tẽr), a machine used for hatching eggs by artificial heat. Various forms have been manufactured. Incubators are divided into a number of chambers suitable to receive the eggs and the heat is furnished by a lamp, which either warms the air direct or conducts it to a reservoir filled with water, whence the warm water is conducted by pipes so as to maintain the temperature uniformly. The proper temperature ranges between 90° and 100°, a somewhat higher degree being necessary during the first week, after which it should be lowered gradually. The eggs should be turned frequently during the first few days of incubation, and a thermometer should be adjusted so as to permit observing the temperature at any time. The incubators in use range in size from a capacity of a few dozen eggs to several hundred. About eighty per cent. is the average hatch of fertile eggs, but to obtain the best results much experience and careful attention to details are required.

INCUBUS (ĭn̤'kū̂-bŭs), a male sprite or demon connected with the superstition of the Middle Ages. It was commonly believed that these demons were the cause of *nightmare.* The corresponding female demon was known as *succuba.*

INDEPENDENCE (ĭn-dḗ-pĕnd'ęns), a city in Iowa, county seat of Buchanan County, on the Wapsipinecon River. It is on the Illinois Central and the Chicago, Rock Island and Pacific railroads. The surrounding country is farming and dairying. It has an excellent high school and is the seat of the State hospital for the insane. Among the facilities are a public library, electric street railways, waterworks, and street lighting. Population, 1905, 3,838; in 1920, 3,672.

INDEPENDENCE, a city of Kansas, county seat of Montgomery County, 85 miles southwest of Fort Scott, on the Missouri Pacific and the Atchison, Topeka and Santa Fé railroads. It is located on the Verdigris River, in an agricultural section, and is surrounded by a productive petroleum and natural gas region. The chief buildings include the public library, the county courthouse, the city hall, and several schools and churches. It has a growing market for agricultural produce and merchandise. The manufactures include glass, brick, cement, flour, pottery, and machinery. The rapid and healthful growth of the city in recent years is due to the development of its manufacturing and commercial enterprises. Population, 1905, 11,206; in 1925, 10,900.

INDEPENDENCE, a city in Missouri, county seat of Jackson County, 10 miles east of Kansas City. It is on the Missouri Pacific, the Chicago and Alton, and other railroads. The noteworthy buildings include the First National Bank, the Chrisman-Sawyer Bank, the county courthouse, the high school, and the public library. It has many fine residences and is the home of many Kansas City business men. The surrounding country is agricultural and fruit growing. It has manufactures of flour, tile, overalls, ironware, and machinery. Pavements, street lighting, waterworks, and other improvements are among the municipal facilities. It was settled in 1827 and received an influx of many Mormon settlers in 1831, before their removal to Utah. The place was chartered as a city in 1889. Population, 1920, 11,686.

INDEPENDENCE DAY, the national holiday of the United States, celebrated on the 4th of July in commemoration of the signing of the Declaration of Independence (q. v.).

INDEPENDENCE HALL, a building erected between 1729 and 1734 as a meeting hall, on Chestnut Street, Philadelphia, Pa. In 1775 it was the meeting place of the Continental Congress, when Washington was made commander in chief of the American army. On July 4, 1776, that body adopted the Declaration of Independence, which was read to a vast public assemblage in the street. The structure is of brick, though much of the woodwork and finishing has been replaced or restored. It is now used as a museum of historical relics and is open to the public.

INDEPENDENTS, the name of a Protestant sect that originated in England in the 16th century. Robert Brown, an English clergyman, organized the sect in 1586, and for some time they were known as Brownists or Separatists. They included those Protestants who believed that each individual church should administer its own affairs, instead of being under the authority of a civil or ecclesiastical official or potentate. Later the members were merged largely with the Congregationalists, who represent a strong following both in England and America at the present time.

INDEX LIBRORUM PROHIBITORUM, the name of a catalogue of books proscribed by the Roman Catholic church, which its members are not permitted to read. Such a catalogue was first prepared by the Council of Carthage in the year 400, but a much larger edition was compiled by the inquisition at Rome under the direction of Pope Paul IV. in 1557. This work forbade the reading of the works of Luther, Calvin, and other reformers, and later other authors of the Protestant faith were placed on the list. With these publications were included a number of books relating to magic, mesmerism, and some of the sciences, but it was provided that bishops could permit educated people to read some of the works of the prohibited list. The *Index Expurgatorius* is a similar catalogue. The latest edition of the latter was issued in 1895, under the direction of Leo XIII.

INDIA (ĭn'dĭ-ȧ), a region of Asia, the most populous member of the British Empire. Formerly the name Hindustan was frequently used instead of India, but it has reference to the land of the Hindus, which is located in the north central part of India. The Empire of India, as the subject of this article is known officially, is in the form of a great triangle. It extends from north to south a distance of 2,000 miles, which is about the extent east and west when Baluchistan is included. The northern boundary is formed by Afghanistan and the Chinese Empire; the eastern, by the Chinese Empire, Siam, and the Bay of Bengal; the southern, by the Indian Ocean; and the western, by the Arabian Sea, Persia, and Afghanistan. The area, including Burma, Baluchistan, and the native states, is 1,766,650 square miles. Popularly the native states and the dependencies are spoken of as Hither and Farther India. With the empire are officially included Aden, on the Arabian Coast, and Socotra, a dependency of Aden.

Description. India is separated from the interior of Asia by the great ranges of the Himalayas, Hindu Kush, and Sulaiman mountains. The surface is naturally separated into three vast regions. In the southern portion is the table-land of Deccan, with a general elevation of from 1,800 to 3,000 feet; north of it is the Great Plain, which is the most fertile and populous region; and the elevated highlands of the Himalayas, which comprise the northern part. These mountains are the most lofty in the world, many of the peaks rising to heights of from 20,000 to nearly 30,000 feet above sea level. They include vast regions that are perpetually covered with snow. Mount Everest, the loftiest of the Himalayas, is the highest mountain in the world. The Hindu Kush extend in ranges westward from the Himalayas, and chains of the Sulaiman and Hala stretch southward along the western border. These mountains can be crossed only by lofty passes, some of them fully 18,000 feet above the sea, hence they have served as a great barrier against invasions from the north. They constitute the height of land between the slopes of India and the Chinese Empire, and the drainage is generally toward the south, being toward the southwest in the western part and toward the southeast in the eastern section.

The Brahmaputra, Ganges, Indus, and Irrawaddy are the four largest rivers of India, the last mentioned being in Burma. The Brahmaputra and the Ganges drain the northeastern section. They have their sources on the southern slopes of the mountains, where the rainfall is heaviest, hence they carry an immense volume of water in proportion to their length and the basins drained. Both discharge by many mouths into the Bay of Bengal, where they have deposited an immense quantity of silt. In the northwestern part is the Indus, which receives the inflow from the Chenab and the Sutlej rivers. It drains an immense basin into the Arabian Sea, which it enters by an extensive delta. Among the rivers of the Peninsula are the Nerbudda and Tapti, flowing into the Arabian Sea; and the Godavari, the Kistna, and the Kavery, discharging into the Bay of Bengal. The Jumna, a tributary of the Ganges, drains a large portion of the central plain. As a whole the coast line is quite regular and not deeply indented, the largest inlet being on the western shore and including the Gulf of Cutch and the Gulf of Cambay. The only lakes are Kolar and Chilka, both of which are located near the eastern coast.

Climate. In most parts of India the climate is tropical, with two distinctive periods, the rainy season and the dry season. The rainy distribution of humidity is more or less irregular season continues from November until March and the dry from May until November, but the on account of which droughts are not infrequent. In the summer or dry season the heat is very great, especially in the southern portion, but the elevated interior and the mountains in the north have a moderate climate. A marked influence is exercised by the monsoons that blow across the country from the Indian Ocean, which carry considerable humidity against the mountain slopes, where the rainfall is excessive. In the northwest, in the region of the Indian Desert, the mean temperature for July is about 96°, which is the hottest part of the country. As a whole the climate is healthful for Europeans, except in the jungle and marsh land along the coast and in the lower courses of the larger streams. In the north central part is an arid region, where famines are quite frequent on account of excessive droughts. The precipitation at Madras is 52; at Bombay, 74; and at Calcutta, 65 inches. The heaviest rainfall occurs in Assam and Lower Burma, where the precipitation ranges from 500 to 600 inches per year.

Flora and Fauna. The growth of vegetation is diversified according to elevation and the distribution of rainfall. Desert conditions prevail in the region lying east of the Indus, in the vicinity of the Gulf of Cutch, where plant life is very scant. Dense jungles are located along the Gulf of Bengal and in the lower course of the Ganges, where the plants are numerous and of large size. In the Deccan, east of the Western Ghats, the rainfall is scant and the plants are correspondingly limited, and in the mountain region the flora is arctic in form. The alluvial lands of the Indus and the Ganges are very fertile, and these regions are the seat of a vast population and the nativity of many useful plants. Among the forest trees are the sandalwood, blackwood, cedar, teak, and many species of palms. Numerous fruit trees abound, especially the mango, banana, and cocoanut. The large species of wild animals are becoming scarce, though the elephant, wild cattle, deer, antelope, and wild goats are still met with. The lion, tiger, and numerous birds and reptiles are plentiful. Many species of the ape, bear, rhinoceros, jackal, leopard, and jungle fowl occur in different sections.

Mining. Though India has vast mineral wealth, the mining industry has not been developed to a considerable extent when compared to its possibilities. The construction of railways and the building of manufacturing enterprises have stimulated a greater interest in the coal resources of the country, and the output of this product shows a steady increase the past two decades. Most of the coal mining is confined to the province of Bengal, but profitable mines are worked in Assam and a number of places in the peninsula. Gold is found in the river gravels of the Himalayas and elsewhere and quartz deposits are worked in Mysore and other regions. Petroleum is obtained in large quantities from Upper Burma, being used in the manufacturing enterprises and for fuel. A monopoly is exercised by the government in the production of salt, which is obtained principally by the process of evaporation along the coast and in some of the small lakes of the interior. Other minerals obtained in paying quantities include lead, copper, and manganese. Though India was long famous for its diamonds, the output of this mineral is now insignificant. Building stone and commercial clays are abundant.

Agriculture. The people of India have looked upon agriculture as an important enterprise for many centuries and it still takes precedence as the chief industry. Improved means of tillage and harvesting are utilized, including much steel machinery, and a vast area has been reclaimed by irrigation. Little farming can be done in Sindh and Lower Punjab without an artificial supply of water, and this is true likewise of many other sections, especially in the Deccan and some districts of the upper region of the Ganges. The irrigated lands aggregate 38,500,000 acres, though the need of supplying water artificially varies somewhat with the prevailing winds at certain seasons of the year. Rice is the most important crop and the acreage cultivated in that product is nearly five times as great as that devoted to the cultivation of wheat. Hay is grown on about half the area cultivated in rice. Other important crops include pulse, cotton, flax, sugar cane, opium, tea, indigo, tobacco, and coffee. Rice is cultivated extensively in the region of the deltas and along the coast, while wheat is the leading cereal in the northwest provinces, and sugar cane is grown largely in Bengal. The latter likewise has large interests in the cultivation of indigo.

Stock raising does not take rank with that enterprise as developed in Canada and the United States. This is due to various reasons, especially to the fact that people in tropical climates subsist largely on a vegetable diet, and because the caste or religious prejudices bar a large number of Hindus from eating pork and beef. To these must be added the circumstance that excessive droughts during the dry season deprive a large scope of country almost entirely of vegetable growth, owing to which stock is frequently reduced almost to starvation. The cattle grown in India belong to the humped variety, a breed that is scarcely known in America. Buffaloes are the chief animals of draft and burden. Interest is developing in the rearing of horses and mules and considerable enterprise is shown in growing sheep and goats.

Manufacturing. The people of India have been celebrated from ancient times for their skill in manufacturing textile fabrics and beautiful metal work. They do not engage extensively in building large enterprises, but work of this kind is done chiefly in small shops or in the houses of the natives. Very simple implements are used and the labor is done almost entirely by hand. Rugs, carpets, and laces obtained from India are in a class by themselves, and are remarkable for their beautiful designs and exquisite workmanship. Within recent years modern machinery has been introduced, especially in the manufacture of cotton and woolen textiles, flour, sugar, spirituous liquors, and paper. Many of the larger manufacturing enterprises are fostered by English capital and superintended by expert laborers, but the work is done chiefly by natives who have been carefully trained by Europeans. Large smelters and machine shops have been constructed and several extensive shipyards are operated. European methods have been introduced in the manufacture of copper, brass, and steel products, but work in ivory and wood carving is still done by native artisans by ancient methods. The sawmills and manufactories, especially those producing furniture and other lumber products, employ European methods and machinery. Formerly large quantities of various commodities that are now manufactured within the country were imported. The list of home manufactures is constantly increasing.

Transportation. India has a larger mileage of railways than all the other countries of Asia combined. Important lines cross it in all directions, hence the chief centers of industry and population have extensive connections for transportation purposes. This fact is a potent factor in promoting the welfare of the country, both in the development of its resources and in conducting the affairs of the government. Lord Dalhousie originated a policy in 1850 to extend the construction of railways, under which private corporations were guaranteed a reasonable income on the capital invested for a term of years. In 1870 the government began to build and operate new lines and at present the publicly owned lines represent about one-half of the total mileage. In 1918 there were 38,500 miles in operation. A number of canals communicate with some of the principal railway lines, while others connect or supplement the rivers, hence all the sections have adequate transportation facilities, except the mountainous regions in the northern part. Navigation is possible for long distances on many of the rivers, particularly on the Indus, Ganges, and Brahmaputra. The country has 85,000 miles of telegraph lines, mostly under government control, and the postal system includes 30,750 post offices. Many highways have been improved with macadam, affording communication to points considerable distances from the cities and railroads.

Commerce. India has held high rank in the trade of the world from an early period of the history of Asia. This is due to the fact that a large number of commodities of value in commerce are produced, as well as to its convenient location on important routes of oceanic transportation. The East India Company established trading posts in India as early as 1600, and through its commercial relations the influence of England was greatly augmented in the trade of Asia. At present the total annual imports have a value of $352,500,000 and the exports are placed at $387,280,000. Great Britain continues to have the largest share of the trade. Other countries that participate to a great extent in its foreign commerce include Germany, France, the United States, Belgium, Egypt, and Japan. Calcutta on the east and Bombay on the west are the two principal ports of foreign trade, and both have commodious and safe harbors. Extensive harbors have been completed recently at Rangoon and Madras. The exports consist chiefly of rice, cotton, coffee, opium, indigo, jute, tea, leather, wool, wheat, drugs, silks, and gunny bags. Formerly considerable raw material was imported, but at present the imports consist chiefly of manufactured products. Manufactured cotton has been imported for many years and still continues to be an important item. Other imports embrace woolens, sugar, iron and steel manufactures, farming utensils, machinery, and railway supplies. A very large majority of the articles represented in the foreign trade are carried by vessels under the flags of Great Britain, Germany, and Austria-Hungary.

GOVERNMENT. In 1858 the Parliament of England declared the king of that country to be the sovereign of India, and in 1876 the queen was proclaimed its empress. The government is administered by the Secretary of State for India, who is a member of the British Cabinet. He has the assistance of an undersecretary and a council of fifteen members. The executive functions are vested in a Viceroy, or Governor General, who is appointed by the crown for a term of six years, and his residence is at Calcutta. He is under the control of the Secretary of State for India, is assisted by a council of five members, and has general jurisdiction of foreign affairs. This council, of which he is a member, is increased by sixteen additional members chosen by the Viceroy, some of whom are natives. In this body is vested the power to make all laws of British India, but certain restrictions are placed upon it. For local government India is separated into a number of presidencies and states, each under the control of a single executive officer, such as a governor or commissioner. The provinces are divided into districts for purposes of local administration, and each district is under the direct charge of a deputy commissioner. The British government at Calcutta has direct political control of three-fifths of the area in India, this portion being included in fourteen local governments and administrations, and the remaining two-fifths comprise feudatory states under native rulers. It is the policy of the British government to permit the native inhabitants, as far as possible, to have the responsibility of local government. This is true in a large measure of the local courts, but the courts of appeal are in the hands of Europeans. The courts of appeal are located at Calcutta, Madras, Bombay, and Allahábád, the judges being appointed by the home government, but supreme judicial power is exercised by the privy council in England, which is the court of last resort. The army of India proper consists of 210,000 men, including that of the feudatory states, about 350,000, and the officers are almost exclusively Europeans.

EDUCATION. About three-fourths of the inhabitants descended from the tribe known as Arya, from whom the term Aryan is obtained, and these people are generally known as Hindus. The language of this class is spoken by a large majority, but the dialects differ materially. This fact, and the circumstance that caste exercises a wide influence, has made it difficult to promote a system of education modeled after that of Europe and America. Instruction is given in the native languages, though English is included in the advanced courses. The school attendance is about 6,500,000, though the males in attendance greatly exceed the females. Many schools and institutes are maintained by foreign missionary societies, all of which have an influence for the betterment of social, religious, and educational conditions. Numerous colleges and high schools are maintained throughout India and there are five universities of note, including those in Bombay, Calcutta, Madras, Allahábád, and the Punjab. The present system places special stress upon higher education, but much is done by the government to further instruction in the trades and in agriculture. As a rule the state schools reach the middle classes, while those conducted by the missionaries are attended principally by those belonging to the lower castes.

Many forms of religious worship are conducted and the creeds professed are very numerous. However, Brahmanism is the faith of a great majority of the people, being professed by over 200,000,000 of the inhabitants. Mohammedanism has been extending since its introduction in the 11th century, the number of adherents throughout India being placed at 62,625,000. The inhabitants of Burma are largely Buddhists, who include about 9,500,000 adherents in India. Those who worship nature are placed at 8,500,000, while the Sikh religion is professed by 2,000,000, and the adherents to Jainism number 1,050,000. The Christians embrace 3,125,000 souls. The denominations represented by the largest numbers include the Roman Catholics, Anglicans, Baptists, Syrians, Lutherans, Methodists, Presbyterians, and Congregationalists.

INHABITANTS. India is densely populated and contains nearly one-fifth of the population of the world. It has about 190 inhabitants to the square mile, as against about 26 in the United States and 283 in China. The valley of the Ganges contains about two-fifths of the entire population, and the greatest density is in the province of Bengal. A small number of inhabitants speak European languages, such as English, German, and French, but these are confined to the cities and to those who hold official positions. The native dialects include principally the Bengali, spoken by about 45,000,000, and the Hindi, which is the vernacular of about 87,500,000 people. The languages or dialects are numerous, but they belong chiefly to the Indo-Germanic group of tongues, which in different forms are common to about 215,000,000 people. English is spoken by about 240,000 of the inhabitants.

Calcutta, in the province of Bengal, is the capital and largest city. Twenty-two cities, in 1906, had a population of more than 130,000. These included, in the order of size, Calcutta, Bombay, Madras, Hyderábád, Lucknow, Rangoon, Benares, Delhi, Lahore, Cawnpore, Agra, Ahmedábád, Mandalay, Allahábád, Amritsar, Jaipur, Bangalore, Howrah, Poona, Patna, Bareilly, and Nágpur. The population of India has increased steadily the past several decades. In 1891 it was 287,314,691; in 1901, 294,360,356; in 1922, 319,054,108.

History. The history of India begins with legends and sketches from Sanskrit literature. The first authentic facts come to us from about the year 2000 B. C., when the original inhabitants were subdued by the Aryans, a people of much advancement in civilization and industrial arts, who inhabited the regions in the northwestern part of India. In 518 B. C. a Persian army under Darius invaded India, and in 327 Alexander the Great led an expedition to the Indus. Buddhism was established in the 3d century B. C., but it yielded almost entirely to Brahmanism in the several succeeding centuries. The Mohammedans invaded India in 711 A. D., and in 1001 the entire country was occupied by them, under Mahmud of Ghazni. Powerful invasions occurred under Genghis Khan in the 13th century, and under Timour, or Tamerlane, in the 15th century. In 1525 the Mogul Empire was established by Sultan Baber. From 1556 to 1607 Akbar, a grandson of Baber, reigned successfully and extended the boundaries so as to include almost the entire peninsula in his dominion, his government being the most important and powerful under the Indian sovereigns. After his death the empire became divided and Europeans began to manifest an interest in the riches of India. Travelers, traders, and missionaries of various European nations frequented the country in the beginning of the 16th century. The first of these to secure a foothold were the Portuguese, who established fortresses and trading posts on the Malabar coast, and soon after obtained control of the ports of Persia, India, and the adjacent islands.

The Dutch established a foothold in India in 1595 and carried on important trade relations with interior river points. In 1613 the British East India Company formed a settlement at Surat and later obtained territory at Madras and Calcutta. The French founded settlements about the same time, giving rise to conflicting claims, and in 1746 a war occurred in which the French won Madras, but later restored it by the Treaty of Aix-la-Chapelle. The Deccan and Carnatic were under the influence of the French governor, Dupleix, at Pondicherry in 1751, and soon a second war resulted, after which Carnatic fell into the hands of the British, and in 1757 Clive won Bengal by a victory over the Moguls at the Battle of Plassey. Charters were granted to a company soon after, which were renewed successively, and at each renewal more control became vested in the home government. In 1838 an effort to establish a British protectorate over Afghanistan failed. The Sepoy mutiny occurred in 1857, in which British residents at Cawnpore and other localities were massacred. However, Queen Victoria had already assumed the government of the principal territories of India in 1855, giving the British decided advantage in the occupation of many strategic points. The mutiny was finally suppressed in 1858, after which vast internal improvements in canal and railroad building were carried forward. In 1877 Victoria assumed the title of Empress of India. Wars with Afghanistan and Upper Burma occurred in 1878 and in 1884, and the latter was annexed in 1886.

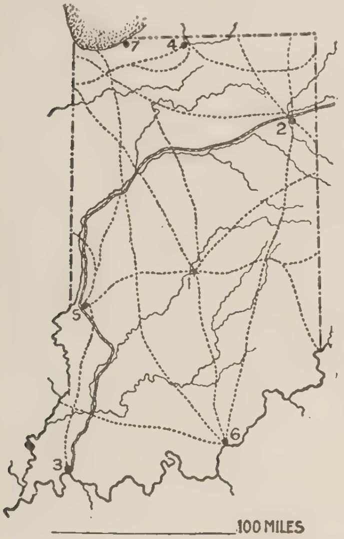
The boundary between India and Afghanistan was surveyed under the supervision of the home government, which was practically determined upon by the Durand Treaty of 1893. In the same year the Earl of Elgin became Viceroy, in whose administration much was done to improve the condition of the natives. A region lying in the basin of the Chitral River, known as Bashgal, was taken from the sphere of British influence and annexed to Afghanistan in 1895. Two years later a serious outbreak occurred on the Afghan frontier, in which the British were victorious after several decisive engagements. Several million people were affected by the severe famine of 1899, which was attended by local revolts against the government. In the same year Lord Curzon of Kedleston became Viceroy, gold was established as the monetary standard, and several regiments were sent to assist the British in the war in South Africa.

Complications arose in 1903 between England and Russia on account of the affairs in Tibet, which both countries determined to protect as neutral territory. The British government sent an expedition under Colonel Younghusband into the country as a means of protecting certain commercial rights, which had been denied by the grand lama, but that official fled when the expedition took Lhasa after some severe fighting. Though Russia objected to the proceedings, the English government announced that its policy was to maintain the commercial rights of India and not to annex Tibet. Gilbert John

Elliot became Viceroy in 1905 and was succeeded by Baron Frederic Chelmford. Lord Reading was appointed Viceroy in 1921.

INDIA INK, the name of a kind of black ink originally made in China and Japan, but so named because it became known to Europeans from its manufacture in India. It is a true black ink, having no tinge of some other hue, and is indelible. Soot or lampblack is used in its manufacture by the Chinese, who mix with it glue or size and a little camphor. Another variety is made from the dried pigment of certain cuttlefishes, which is browned by the action of an alkali and is known as *sepia*. The Chinese use India ink for writing and painting. In America and Europe it is employed in pen and ink drawing. The depth of the shade can be regulated by the amount of water used in mixing the ink.

INDIANA (ĭn-dĭ-ăn′ȧ), an east central State of the United States, popularly called the *Hoosier State*. It is bounded on the north by Michigan and Lake Michigan, east by Ohio, south by Kentucky, and west by Illinois. The southern half of the western boundary is formed by the Wabash River and it is separated from Kentucky by the Ohio River. It has a length of 275 miles from north to south and the greatest breadth is 145 miles. The area is 36,350 square miles, which includes 440 square miles of water surface.



INDIANA.

1, Indianapolis; 2, Fort Wayne; 3, Evansville; 4, South Bend; 5, Terre Haute; 6, New Albany; 7, Michigan City. Dotted lines indicate chief railroads. Heavy line shows Wabash and Erie Canal.

Description. The surface is an undulating plain, sloping toward the southwest. Along the Ohio River is the lowest land, being 300 feet above the level of the sea in the southwest corner. The northwestern part has an elevation of 500 to 650 feet, and in the northeastern section the elevation attains a height of 1,200 feet. Sandy hills extend along the shore of Lake Michigan, which are interspersed more or less with swamps, and the counties bordering on the Ohio have a broken and hilly surface. Several large marshes abound in the sandy region of the north, some of which assume the form of shallow lakes, and these are characterized by a growth of rushes, slough grasses, and evergreen trees. Much of the surface is a fertile, rolling prairie. Several large caverns occur in the south central part, especially in Crawford County, where is located the celebrated Wyndotte Cave.

Among the principal rivers are the Wabash, White, and Kankakee, all of which belong to the Mississippi system. In the northern part is the Saint Joseph River, which flows into Lake Michigan, and the northeastern section is drained by the Maumee into Lake Erie. However, the larger part of the State is drained by the Wabash, which receives the inflow from the Eel, Salamonia, Tippecanoe, Wild Cat, and Mississinewa rivers before reaching the western border, and about fifty miles from its confluence with the Ohio it receives the White River. English Lake, Turkey Lake, and Tippecanoe Lake, all in the northern part of the State, are the largest bodies of water.

Climate. The climate is very similar to that of Ohio and Illinois. In the southern part the mean temperature is considerably warmer than that of the northern section. The mean annual temperature of the State is about 62°, with extremes ranging from 22° below zero in winter to 95° above in summer. Cold winds blow across the lake and noticeably affect the climate in the winter. Vegetation appears in April and early frosts occur in September. All parts of the State have an abundance of rainfall, which is somewhat heavier in the south than in the north, and the average is about 42 inches. Heavy snows fall in the winter, usually affording from one to three months of sleighing.

Mining. The coal fields are estimated at 6,500 square miles, located chiefly in the western and southwestern part. In quality the product takes rank as a good grade of bituminous coal, being similar to that of Illinois, and it is used and shipped largely for heating purposes. In 1925 the output was about 27,500,000 tons. Petroleum is a valuable product and is found extensively in the Lima district, which includes the counties of Adams, Blackford, Grant, Jay, and Wells. The State has a natural gas field of about 2,550 square miles, located chiefly in the central part, and a large quantity is transported by pipe line to Whiting and other manufacturing points near Chicago. Limestone and sandstone quarries are worked extensively and a grade of rock known as Bedford limestone, which is exported in large quantities, is classed among the best known building material in America. Marls used in manufacturing cement and brick and fire clays are abundant.

Agriculture. The soil generally is fertile and well adapted to the production of agricultural products. Most of the rivers and smaller streams are skirted by valuable belts of timber, and forests of greater or less extent are found in different regions of the State, but a large area formerly well timbered is utilized in farming. About 95 per cent. of the tillable land is cultivated. The farming is conducted on progressive methods, involving careful cultivation and fertilization. Much of the surface formerly wet and marshy has been redeemed by drainage. Corn is the chief cereal and the acreage planted is nearly equal to that cultivated in both wheat and hay. It holds a high rank among the leading corn and wheat growing states, both in the quality of the product and in the yield per acre. Other products include oats, potatoes, rye, and vegetables. Fruit is grown in all parts of the State, but the best quality of quinces, pears, and peaches thrive in the southern section. Vast interests are vested in the live-stock industry. Horses, cattle, and swine receive an equal share of interest, and mules and poultry are grown profitably. There has been a decrease in the number of sheep, but the interests in dairying have grown steadily with every decade.

TRANSPORTATION. Michigan City is the leading port on Lake Michigan, and through it communication is maintained by steamship navigation with the leading cities of the Great Lakes. The Ohio River is navigable the entire distance along the southern border, and the Wabash furnishes communication for small boats. Transportation formerly was important by the Wabash and Erie Canal and the Whitewater Canal. The National Road, though not important at present, formerly constituted a highway of much value. Few states are as well provided with steam and electric railways as Indiana. It has a total steam railway mileage of 7,350 miles. The railroads crossing the State include lines of the great systems that connect Chicago with the commercial centers of the east and south, hence they furnish direct connection with New York, Philadelphia, and Saint Louis. Indianapolis, located in the center of the State, is the focus of many railways and is noted as a jobbing and manufacturing center.

MANUFACTURING. Since the State has a large supply of coal and natural gas, in addition to being located conveniently to the coal fields of Illinois and Ohio, it is highly favored in facilities to manufacture. In addition must be considered its favorable situation for transportation, giving it points of vantage rarely excelled. Steel and iron take high rank among the manufactured products. The quality and quantity of its glass products have opened a market in many countries of Europe. Terre Haute is a center of railroad interests. Many of the cities are noted for their output of flour and meal. Gary, East Chicago, Hammond, and Whiting are among the manufacturing centers located near Chicago, and their growth in various enterprises, such as the manufacture of machinery, books, packed meats, and steel and iron products, give evidence of constant and healthful growth. Other manufactures include paper, railway cars, furniture, clothing, textiles, automobiles, refined oil, and butter and cheese.

GOVERNMENT. The government is organized under a constitution which was ratified by the people in 1851. It vests the chief executive power in the Governor and the Lieutenant Governor, who are elected for a term of four years. Other State officers include the treasurer, secretary, auditor, attorney-general, and superintendent of public instruction, each elected for two years. The General Assembly consists of a senate and a house of representatives. In the former are 50 members elected by districts for four years, while the latter has 100 members elected for two years. Annual meetings are held by the Legislature and all revenue bills must originate in the house, but amendments may be proposed by the senate. Circuit courts, an appellate court and the supreme court comprise the judicial system. Superior courts may be established in the large cities. Justices of the peace are elected in the townships. Local government is vested in the towns, cities, and counties.

EDUCATION. Indiana has an efficient system of public instruction, which is maintained under the supervision of a state superintendent, who is assisted by county and city superintendents. The township is the smallest unit in the educational system and is under the direct management of a trustee, who is elected by the voters of the townships, while the county superintendent is chosen by the school trustees of the entire county. Adequate and well articulated courses of study are maintained, hence the instruction is in a systematic order from the lower schools to the higher institutions. Indiana University, situated at Bloomington, is the highest institution in the system of the State. A large proportion of the teachers have received training in normal schools and colleges. The State maintains six normal schools of high standard. Teachers' courses are also carried by many high schools, academies, and colleges. About forty institutions carry college or university courses, including De Pauw University, Greencastle; the University of Notre Dame, Notre Dame (near South Bend); Purdue University, Lafayette; Valparaiso University, Valparaiso; Butler University, Indianapolis; Earlham College, Richmond; Concordia College, Fort Wayne; Wabash College, Crawfordsville; Vincennes University, Vincennes; Franklin College, Franklin; and Hanover College, Hanover.

An efficiently managed system of correctional and charitable institutions is maintained by the State, some of the institutions being supported partly by the county, and other benevolent institutions are maintained by private interests. Knightstown has a soldiers' orphans' home, Lafayette has a soldiers' home, Jeffersonville has a reformatory, Michigan City has a penitentiary, and Indianapolis has a school for the deaf, dumb, and blind. Hospitals for the insane are located at Evansville, Indianapolis, Logansport, and Richmond. The public institutions maintained for charitable and reformatory purposes are generally under the control of non-partisan boards. Indianapolis is noted for its efficiently managed system of public schools.

INHABITANTS. The population is made up largely of native-born inhabitants and a large number who settled in the State from Virginia, Kentucky, and South Carolina. About half of the foreign born are Germans. Indianapolis is the capital and largest city. Other cities include Evansville, Fort Wayne, Terre Haute, South Bend, New Albany, Lafayette, Logansport, Richmond, Michigan City, Elkhart, and Jeffersonville. In 1900 the total population was 2,516,462. This included 57,960 colored inhabitants, of whom 223 were Indians and 57,505 were Negroes. Population, 1920, 2,930,544.

HISTORY. The territory comprised within the present limits of Indiana was first visited by white men in 1679. La Salle crossed the State the following year, when he visited the Illinois Indians. The first settlement was made at Vincennes, on the Wabash River, in 1702 by the French under La Salle. It was a part of New France until 1763, when it became a possession of England. The United States acquired it in 1783, having been conquered under George Rogers Clark and a number of frontiersmen during the Revolution. In 1800 the Territory of Indiana was separated from Ohio; Michigan Territory was cut off in 1805; Illinois Territory, in 1809; and what remained was admitted as a State in 1816. Indian wars occurred at various times, but the success of General Harrison at Tippecanoe in 1811 terminated the more important contests. The center of population of the United States was calculated by the census of 1890 at a point southwest of Greensburgh, the county seat of Decatur County, twenty miles east of Columbus. Thirty years later, in 1920, the center of population in the United States was in southern Indiana, about eight miles northeast of Spencer, the county seat of Owen County. Its growth in wealth and population has been uninterrupted from its admission into the union.

INDIANAPOLIS (ĭn-dĭ-ạn-ăp′ō-lĭs), the capital and largest city of Indiana, county seat of Marion County, 182 miles southeast of Chicago, Ill. It is located on the White River, in the center of the State, on the Pennsylvania, the Monon, the Big Four, the Chicago, Indianapolis, and Louisville, and other railroads. The surrounding country is rich in agricultural resources and in its vicinity are productive coal fields. Though an inland city, it is the seat of a large commerce. A belt railway encircles the city, by which it is possible to handle a large volume of freight with facility. The street railway system includes 140 miles of tracks, and with it are connected numerous interurban electric lines that furnish transportation facilities with other centers of commerce. Near the principal business section is a handsome union depot, into which the railway passenger trains enter.

Indianapolis is noted for its beautiful streets, which are regularly platted and substantially paved. From a circular plaza in the center of the city, called Monument Place, radiate the four principal avenues. Georgia, Market, Maryland, and Washington are the most important business streets. Many of the thoroughfares are beautiful on account of fine lawns and imposing residences, and all are amply lighted by gas and electricity. Delaware, Meridian, and Pennsylvania are especially noted as residential streets. The parks include 1,250 acres. Riverside Park, extending along the White River, Woodruff Place, and Military, Garfield, University, and Saint Clair parks are among the mots noted public grounds. Many fine monuments and statues ornament the public places. The Soldiers' and Sailors' Monument, designed by Bruno Schmitz of Berlin, was erected in Monument Place to commemorate the Union veterans of the Civil War. In the capitol grounds is a monument of Thomas A. Hendricks and University Park has a statue of Schuyler Colfax. Among the statues are those of William Henry Harrison, Oliver Perry Morton, and George Rogers, and a fine memorial has been erected to the memory of Benjamin Harrison. The cemeteries include Greenlawn, Crown Hill, and those maintained by the Lutheran, Roman Catholic, Jewish, and other denominations.

Indianapolis is noted as a center of learning. The public school system has a national reputation for its carefully articulated courses of study, which range from the kindergarten through the grades to the high school, and are designed to prepare for college and university work. It is the seat of many institutions of higher learning, both professional and general, including Butler University, which maintains departments of dentistry, pharmacy, and law. Other institutions of learning include the State institutions for the education of the blind and of the deaf and dumb, a Roman Catholic seminary, United Brethren College, and several schools of arts and sciences. It is the seat of numerous charitable and reformatory institutions. The principal buildings include the city hall, the county courthouse, the public library, the Commercial Club, the Columbia Club, the post office, the Claypool Hotel, and numerous office building. All of the leading Christian denominations have fine churches. The State capitol, erected at a cost of $2,125,000, occupies two large blocks and is a fine specimen of modern architecture.

The city has large interests in various manufactures and other enterprises. It has many grain elevators and extensive stock yards. The chief manufactures include cotton and woolen goods, pianos, sewing machines, furniture, railroad cars, flour, drugs, terra cotta, and milling machinery. It is an extensive market for grain, fruit, and merchandise, and has a large jobbing and wholesale trade that extends far beyond the borders of the State. The first settlement on its site was made in 1819. Two years later it became known as the village of Indianapolis. It was made the capital of the State in 1825, when the seat of government was removed from Corydon. Its growth as a commercial center dates from 1847, in which year it was connected by a railway with the Ohio River at Madison. Natural gas was piped to the city in 1889 and introduced in manufacturing enterprises. In population it takes rank as the twenty-first city of the United States. Population, 1920, 314,194.

INDIAN ARCHIPELAGO. See **Malay Archipelago.**

INDIANA UNIVERSITY, a coeducational institution of learning at Bloomington, Ind., founded in 1820 as Indiana Seminary. It was chartered as a State institution in 1838, since which time it has been a part of the public school system. The departments include those of law, dentistry, medicine, commerce, and collegiate work. A biological station and extension courses are maintained. Degrees of bachelor of law, bachelor of arts, master of arts, and doctor of philosophy are conferred. It has a library of 172,000 volumes, a faculty of about 200 and property valued at $5,458,000. The attendance is about 5,000 students.

INDIAN CORN. See **Corn.**

INDIAN MALLOW, or **Stamp Weed,** a plant of the mallow family, found native in many parts of Asia. It has been naturalized in Canada and the United States, and is troublesome as a weed in the cultivated lands of the Mississippi Valley and elsewhere. The leaves are heart-shaped, the flowers are orange-yellow colored, and the stem grows to a height of three to four feet. It is difficult to destroy by cultivating with machines, hence it becomes obnoxious in corn fields during the principal part of the growing season.

INDIAN OCEAN, the third in size of the five great oceans. It lies south of Asia, west of the Sunda isles and Australia, north of the Antarctic Ocean, and east of Africa. A line drawn from the southern extremity of Tasmania to the Cape of Good Hope is its southern boundary, from which it gradually narrows toward the north. India divides it into the Bay of Bengal and the Arabian Sea, and from the latter the Persian Gulf and the Red Sea branch toward the northwest. Its length from north to south is about 6,500 miles, and the breadth is from 4,000 to 6,000 miles. The Equator passes through it, along which the equatorial current flows from east to west. Its navigation is influenced by periodic monsoons and trade winds. The principal rivers flowing into it include the Limpopo and Zambezi from Africa; the Ganges, Indus, Tigris, Euphrates, and Irrawaddy from Asia; and the Ashburton, Gascoure, and Murchison from Australia. Ceylon and Madagascar are the only large islands, though there are many small islands and several important groups of islets. Its depth is greatest near the coast of Asia, southeast of Java, where soundings to a depth of 20,340 feet have been made. The greatest depth in the Arabian Sea is 15,000 feet and in the Bay of Bengal it is about 13,500 feet. Its depth near the southeastern coast of Africa ranges from 7,500 to 12,000 feet.

INDIANOLA (ĭn-dĭ-ạn-ō′lȧ), a city of Iowa, county seat of Warren County, eighteen miles south of Des Moines, on the Chicago, Burlington and Quincy and the Chicago, Rock Island and Pacific railroads. It is surrounded by a fertile agricultural and coal-mining region. The principal buildings include a courthouse, a public library, and several fine schools and churches. It is the seat of Simpson College, a Methodist Episcopal institution founded in 1867. Population, 1905, 3,396; in 1920, 3,628.

INDIAN RESERVATIONS, the tracts of land set apart for the Indians by treaty or by executive orders. It was long the policy of the government of the United States to reserve certain tracts of land for the Indians, from which white trespassers were excluded, and the Indians themselves could not pass beyond the limits except for necessary purposes or by special permission. This system of reserving lands had its origin in the difficulty of keeping peace in the frontier territory. After being defeated in war, the Indians usually agreed to a treaty of peace that bound them to retire to a certain reservation, where they could live by themselves and under the peaceful protection of the government. In some cases the tribes agreed to accept the value of a part of their possessions in money, hence released it and confined their residence to a smaller area. Reservations of the latter class were usually made by an act of Congress, while the former were set apart by an executive order under the approval of the Senate. The largest reservation at present is that of the Navajo Indians in Arizona, which embraces 9,500,000 acres. Several reservations in South Dakota cover an area nearly as large. The total number of reservations in the United States at present is about 140. An agent or superintendent has charge of the affairs of a reservation and is responsible to the commissioner of Indian affairs who is under the direction of the Secretary of the Interior. Citizenship is not extended to Indians on reservations, but they may settle on other lands and thus become entitled to the privileges of a citizen. Many Indians have lost their racial characteristics and are now regarded as white citizens, but purely Indian citizens in the United States who are entitled to vote exceed 20,000.

INDIAN RIVER, a tidal inlet of Florida, located in Brevard and Volusia counties, extending along the east coast of the State. It is about ninety miles long and communicates with the Atlantic Ocean at Indian Inlet. The width varies from several hundred feet to three miles, but it is shallow and can be navigated only by boats drawing not more than five feet. Several resorts for invalids and sportsmen are located on its banks.

INDIANS, American, the collective name applied to the people found in America when it was discovered by Columbus. The name originated from the incorrect idea that the continent is a part of India, and that these people were only a portion of the great population of Southern Asia. However, they generally called themselves *Onkwe Honwe,* meaning men. More recently they came to be called the *American* or *Red* race.

INDIAN CHIEF.

Indian Population. The most trustworthy early writers place the number of Indians east of the Mississippi River at the time America was discovered at 200,000. Aside from this we have no reliable data, but it is generally assumed that the Indian population of both North and South America was fully 12,000,000. California alone, at the time of the gold discovery, had an estimated Indian population of 200,000. At present Alaska has 29,536; British America, 100,000; and the United States, 349,595, or a total of less than 500,000.

Distribution. The distribution of the Indians at an early period depended upon the existence of forests and game. They lived in tribes and clans. All were members of one great family, but they ranged from the rudest savages to the cultivated Aztecs of Mexico and the Peruvians of South America. In the extreme north were the Eskimos, who still occupy the northern part of the British possessions. Those formerly dwelling in the vast regions south of the Eskimos have been widely diversified by intermarriage and scattered from the regions they formerly occupied. The tribes occupying the northeastern portion of the United States were classed either with the Algonquin or Iroquois races. Those in the northwest, extending far into Canada, were classed as Siouan Indians, while in the southern regions were the Mobilians and the Natchez. The Aztecs occupied large portions of Mexico and Central America, but in these regions were also the Otomis, Maya, and Quiches Indians. The Peruvians of South America were advanced in civilized arts quite as much as the Aztecs, and included the Inca and the Aymaras races. In Chile were the Araucanians; on the Atlantic slope, the Guaranis; and on the northern coast, the Caribs, who also occupied most of the West Indian islands. In the extreme south lived the tall Patagonians.

Indian Wars. The Algonquins and Iroquois included many branches, but these two great families were continually at war with each other for supremacy, and later offered formidable resistance to the onward march of the Europeans. At intervals they made incursions toward the West, where they were met by the warriors of the many affiliated tribes of the Sioux Indians, who were often at war with each other when not in conflict with their more powerful rivals of the East. The English first engaged in hostilities with the Indians in Virginia in 1622, and these were followed by engagements in New England in 1637. The Indian wars waged between 1790 and 1795 against the Miami Confederation in Ohio were the most destructive of human life, but General Wayne dealt a crushing defeat to them in 1793. The success of General Harrison at Tippecanoe, in 1811, checked them materially, but in the following year the Indians became allied with the British, and were again defeated by Harrison in 1813 at the Thames, when Tecumseh was killed. General Jackson in the same year conducted operations against the Creeks in the south and defeated them at Talladega and the Horse Shoe Bend of the Tallapoosa River. He likewise defeated the Seminoles in Georgia and Alabama in 1817, and on the same expedition executed two Englishmen, Arbuthnot and Ambrister, after conviction by court-martial on a charge of inciting the Indians to cause disturbances. The last battle with the Indians taking rank as a severe contest occurred on the Little Big Horn River, near the Black Hills, in 1876, when General Custer was slain.

Government and Industries. Government among the Indians was loosely administered, and, though confederations were formed among the tribes, they were not of long duration. Their occupations were principally hunting and fishing. They dwelt largely in tents and other perishable buildings, but some, as the Pueblos, built of stone or adobe, or constructed *kivas,* or public rooms, underground. Some tribes developed skill in the culture of corn, beans, and tobacco, and the more highly civilized of Mexico and Peru were considerably advanced in civilized arts. They built dwellings and cities; constructed aqueducts, canals, and highways; had a recognized system of government and a fixed form of worship; and left to future generations massive pyramids and innumerable mummies. The manufactures of the Indians in the region now occupied by the United States and Southern Canada included bows, arrowheads, pottery, snowshoes, stone pipes, canoes, baskets, and other articles useful to them in domestic life and in the arts of war. Their dress was largely of the skin of animals, and their food consisted of vegetables and a few cereals, but principally of the wild game which was then very abundant. They had few domestic animals aside from the dog, but became very fond of horses, which they first obtained from the Spaniards.

INDIAN CHILDREN OF NORTH AMERICA

MEXICAN HUT WITH ROOF OF TWIGS AND LEAVES

ESKIMO FAMILY FROM LABRADOR

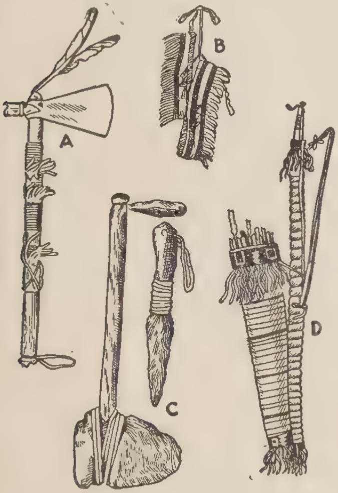
INDIAN HUT MADE OF SKINS

(Opp. 1382) INDIANS OF NORTH AMERICA.

Indian Chief. Indian Chief.

Indian Man and Maid in Native Attire.

Religion and Characteristics. In religion the Indians held that there is a future life and that the spirit after the death of the body enjoys the happy hunting grounds. It was commonly believed that a spirit animates every living plant and animal. While many of the tribes believed that virtue and bravery constitute essentials to welfare in this life, they did not make a distinction as to the influence that the conduct in the present life might have in attaining to happiness beyond. The name *Red* race originated from the reddish tint observable in their complexion, which varies from almost white to dark brown. In nearly all Indians the hair is long and straight, usually black, but sometimes brownish. The eyebrows are heavy, the beard is scant, the eyes are sleepy and dull, the lips are compressed, and the face is broad. Some ethnologists think they descended from the Mongolian race, while others regard them a mixture of the Polynesian and Caucasian with the Mongolian. From the tradition of their tribes it is learned that they themselves thought that they emigrated from some region, but know not from whence. The sun worship of the Incas and Aztecs has been taken to indicate some connection with early Asiatic peoples, while the Eskimos of North America are quite identical with those of Siberia.



INDIAN IMPLEMENTS.

A, Tomahawk: *B*, Head dress; *C*, Stone implements; *D*, Quiver and bow case.

Policy of the Government. The policy of the government in Canada and the United States for many years has been to make citizens of the Indians by giving them every possible encouragement in educational facilities, landed possessions, and financial support. It has been the aim from an early date to make them self-supporting. Indian Territory was set apart for this purpose by the United States with the view of inducing them to found homes and give them greater opportunities in educational and industrial advancement. When that region was annexed to Oklahoma, in 1906, this policy was continued. However, the larger number of Indians are on reservations, both in Canada and the United States, and each country maintains a Department of Indian Affairs. The Indians in territory of the United States are located principally as follows: Oklahoma, 64,455; Alaska, 29,536; Arizona, 26,480; Michigan, 6,354; South Dakota, 20,225; Minnesota, 9,182; California, 15,377; Montana, 11,343; Mississippi, 2,203; Oklahoma, 11,945; North Dakota, 6,968; New Mexico, 13,144; New York, 5,257; Nevada, 5,216; Oregon, 4,951; Kansas, 2,130; Nebraska, 3,322; Idaho, 4,226; Utah, 2,623; North Carolina, 5,707; Wisconsin, 8,372; Washington, 10,039; and Wyoming, 1,686.

Many of the tribes do not look with favor upon an intermingling with the whites, but others take readily to education and intermarry extensively. Some of the Indians have attained to much educational advancement and have become famous as scholars and educators. Large numbers attend the higher institutions of learning, where they make an honorable record. Besides taking up farming and other industries, they engage in the practice of medicine and law, the publication of newspapers, and the various arts and trades. Under certain conditions the Indians are admitted to full citizenship, when they may hold office under the government, exercise the right of suffrage, and have all privileges and benefits accorded to other citizens. The condition under which these privileges are extended is that they stipulate with the government to waive all claims to public support.

INDIAN SUMMER, the name of a season of warm and pleasant weather that occurs late in the fall, usually in October or November, and is confined chiefly to the northern part of the United States and the southern part of Canada. Usually it occurs but once in a season, though sometimes it may be noticeable two or three times. It is distinguished by a dry and somewhat hazy atmosphere. A similar season in England is known as All Hallow Summer or Saint Martin's Summer, and in Germany it is called Saint Luke's Summer and Old Woman's Summer. The name Indian Summer is supposed to have been derived from predictions of fair weather made by the native Indians while in conversation with the early settlers in America.

INDIAN TERRITORY, a former territory of the United States, located south of Kansas and west of Missouri and Arkansas. It was set apart in 1834 for Indian reservations, but was united with Oklahoma in 1906, which was admitted as a State the following year. The Creeks, Choctaws, Cherokees, and Chickasaws settled in this region in 1834. Later the Seminoles and other tribes received reservations. The name *Five Civilized Nations* was applied to those mentioned, and the others were distributed on seven reservations within the region. See **Oklahoma.**

INDIA RUBBER, or **Caoutchouc,** a soft, flexible, and very elastic substance derived from the milky sap of various tropical plants. It is a composition formed chiefly of carbon and hydrogen. Many species of shrubs and trees produce gummy products that have commercial value.

The principal tree yielding juices from which India rubber is manufactured is tall and possesses an abundance of the fluid. The juice is secured by making incisions in the trunks of the trees, under which receptacles are placed. From ten to twenty-five gallons of the juice are obtained from a single tree in a season, and about two pounds of good rubber is secured from a gallon. The rubber is obtained in a crude form by evaporating the juice in the sun, or in tanks placed over a fire. It may also be coagulated by mixing with it sap from the bejuco vine. The raw material is purified by boiling and subsequently by pressing through powerful machines, after which it is rolled into plates and dried.

The India rubber of commerce is produced largely in Mexico, Central America, South America, Java, Singapore, Assam, Penang, and the Congo basin of Africa. In 1823 Mackintosh patented a water-proofing process by which India rubber came largely into use. At present its applications are innumerable. It is now rarely employed in a pure state, but is vulcanized by heating the pure rubber with sulphur. In this way it is hardened and serves many useful purposes, such as for belting, shoes, hose, tires, cloth, combs, bracelets, furniture, paper knives, water packing, life preservers, paving, gas bags, and gloves. The harder products, such as buttons, inkstands, rulers, canes, and artificial teeth, are secured from rubber which is vulcanized under an application of sulphur exposed to a high temperature. In making covering for telegraph wires it is vulcanized with asphalt, sulphur, and oils.

INDIGIRKA (ĕn-dyĕ-gĕr′kȧ), a large river of Eastern Siberia, rises in the Stanovoi Mountains, and after a course of 900 miles flows into the Arctic Ocean. It enters the sea through a large delta about 450 miles east of the mouth of the Lena. The region traversed by it consists largely of frozen marshes, and the inhabitants support themselves chiefly by the chase.

INDIGO (ĭn′dĭ-gō), a vegetable dyestuff that yields a beautiful and very durable blue dye. It is employed extensively in forming a basis for black dye in woolen goods, for dyeing, and for calico printing. The product is obtained from numerous plants of a shrubby and herbaceous character which thrive in equatorial regions. These plants belong to the order of *Leguminosae,* of which the *Indigofera tinctoria* is a genus. The plants are from two to six feet tall, have rounded leaves, and bear blue, purple, or white pea-shaped flowers. Ordinarily they are classed with the bean family. They are cut at the time of blooming, which occurs when the plants are about three months old. The seeds are sown early in the spring and the cutting takes place in midsummer. After several months a second crop shoots up, and in some localities a third. The indigo market of Southern Asia centers largely at Bengal, whence large quantities are exported to the ports of Europe and America. The plants which yield indigo are now grown extensively in warmer parts of Europe, Africa, and America, especially in Central America. Only from fifty to sixty per cent. of the indigo of commerce is pure indigo blue, and the other portion consists of indigo yellow, indigo gluten, indigo red, or some allied substances. From history it is learned that indigo has been produced in India from remote times. It was imported from that country by the Phoenicians, Grecians, and Romans.

INDIGO PLANT.
A. Fruit.

INDIGO BIRD, a North American finch, native to the southern part of the United States, Mexico, and Central America. In the summer time it comes north as far as Missouri, where it is captured and domesticated as a cage bird. It is about six inches long. The general color is greenish-blue, but the wing feathers are brown, and it is black beneath the bill. It nests in the tallest trees and is noted for its beautiful song. The female is somewhat smaller than the male and has a yellowish-brown body with the wings several shades darker. From three to four eggs of a pale bluish-white, without spots, are laid early in the spring.

INDIUM (ĭn′dĭ-ŭm), a metal found in various zinc minerals, in some galenas from Italy, and in the flue dust of the furnaces in which zinc ores are treated. Reich and Richter discovered this metallic element in 1863 with the aid of the spectroscope, while analyzing specimens of zinc blende obtained from Freiburg. In a pure state the metal has a bluish-silvery luster, and in softness and ductility it resembles lead. It is slightly volatile, has a very low fusion point, and tarnishes slowly in air. See **Chemistry.**

INDO CHINA (ĭn′dō chī′nȧ), a name frequently applied to the larger part of the southeastern peninsula of Asia, which is situated between the Bay of Bengal on the west and the gulfs of Siam and Tonquin and the China Sea on the east. The area is estimated at 363,422 square miles. It includes Anam, Laos, Cambodia, French or Lower Cochin China, and Tonquin. The name is sometimes applied to the entire peninsula, in which sense it includes Burmah. This region contains natural resources of much commercial value and has been developed under a colonial policy fostered largely by France. Railroad construction, canals for navigation and irrigation, telegraph and telephone lines, and municipal facilites have received aid from the French government. The exports and imports are alike extensive. Among the chief imports are machinery, woolen goods, cotton products, and various manufactured articles. The exports embrace principally rice, rawhides, pepper, volatile oil, copra, cocoa, and many species of fruits. Mining has developed in copper, coal, tin, iron, and zinc. It has productive fields of gas and mineral oils. The region is well watered by the Menam and Mekong rivers and their tributaries, which furnish extensive navigation facilities and supply water for the irrigation canals. Stock raising and lumbering are important industries. The governor general of the French possessions is resident at Hanoi, which is the chief seat of political influence, and in the separate divisions are local and subordinate governors.

INDO-EUROPEAN (ĭn-dȯ-ū-rȯ-pē′ạn), **Indo-Germanic,** or **Aryan,** the names applied to the most important of the groups of languages into which human speech has been classified. It is subdivided into numerous branches, of which the Germanic or Teutonic is the most important, which includes the German, English, Dutch, Scandinavian, and extinct Gothic. Other branches are the Slavonic, including the Russian, Polish, and Bohemian; the Latin or Italic; the Celtic, which embraces the Breton, Irish, Welsh, and Gaelic; the Lithuanian; the Greek; the Persian; the Armenian; and the Sanskrit. The oldest literature is included in the Sanskrit and is found among the Hindus. All these branches of the Indo-European language descended from a parent or ancestral tongue which prevailed at a remote period in Central Asia, and spread through succeeding centuries into India and westward through Asia to the western extremities of Europe. Searching study has demonstrated that there is a similarity in construction and meaning sufficient to warrant a classification through succeeding ages, tracing the tongues to a common source.

INDRA (ĭn′drȧ), **a diety of the Hindus, worshiped** as the supreme god throughout the Vedic period. He lost his supremacy by the rise of Brahma, Siva, and Vishnu, and is now assigned a subordinate place in the Pantheon. In paintings and sculpture he is represented with numerous eyes and four arms and is seated on an elephant. His powers include the control of rain and shade, the hurling of thunderbolts, and the restoring of the sun to the sky. He has also been assigned a supervisory influence of Swarga, a paradise in which pious men and inferior deities dwell in eternal felicity. Indra is interesting to the student of history for the important connections given him in the literature and legends of the Hindu peoples.

INDUCTION (ĭn-dŭk′shŭn), a term in logic which implies the process of reasoning by which we proceed from the particular to the general. It is used in contradistinction to deduction, a process of reasoning from the general to the particular. In following the inductive method we not only arrive at conclusions of generals, but rise into higher generalities. It involves the process of proceeding from the known to the unknown, and obtaining a conclusion broader and deeper than the premises. In other words, induction is the process by which we conclude that what is true of certain individuals of a class is true of the whole class, and what is true in certain times will be true at all times. The impossibility of observing all particulars makes it necessary to reason inductively with much care, lest the conclusion be erroneous. The basis of induction is the established fact that nature is uniform, and by observing in detail every material fact the conclusion arrived at must be true.

INDUCTION, in electrical science, a term used to describe the action by which an uncharged body will exhibit electrical forces when it is brought near an electrified one. An insulated conductor charged either positively or negatively so acts on bodies in a natural state placed near it as to decompose the neutral fluid, attracting the opposite kind of electricity and repelling the same kind. Heinrich D. Ruhmkorff (1803-1877), a German inventor, produced an instrument called the *induction coil* (q. v.), by which induced currents of great electro-motive force are secured in a long secondary coil by means of rapidly making and breaking the current of electricity in a primary short coil of wire. The principle of induction is illustrated in the Leyden jar, in which mutual induction takes place between the two coatings, one being charged positively and the other negatively.

INDUCTION COIL, or **Ruhmkorff Coil,** an instrument used for the purpose of getting induced electric currents of high potential difference. Michael Faraday was the first to state the fundamental fact of electro-magnetic induction, which he did in a paper read before the Royal Society of London in 1831. The form in use at present is that of Ruhmkorff, who devised a superior method of winding the coil. The essential parts are a soft iron core, a primary coil of insulated wire connected with a battery, a secondary coil of fine insulated wire, a brake arrangement to work automatically between the battery and the primary coil, a condenser connected with the primary circuit on each side of the break point, and a switch to make and break the current. When the induction coil is attached to the battery and the switch is turned on, the current passes through the primary and the iron core is acted upon as a magnet. The soft iron armature, which it attached to a vertical spring, is attracted and breaks the current at C, but when this is done the core ceases to be a magnet, hence the armature is thrown back by the spring, and the movement of coming in contact and being released is repeated from time to time in rapid succession. A strong potentiality is secured in the induced current through the length of the secondary coil and the fineness of the wire. When the binding posts of A and B, which are at the opposite ends of the coil, are brought near each other, a spark passes between them. Peculiar physiological effects are obtained by taking hold of the terminals in a small secondary coil, but the effect of a large coil is quite painful. Induction coils are used in telephones, in telegraphy, and in medical laboratories.

INDUCTIVE METHOD. See **Deductive Method.**

INDULGENCE (ĭn-dŭl′jens), a partial or total remission of the temporal punishment which still remains due to sin after its guilt is forgiven, or has been remitted by penance. It is a point of doctrine in the Roman Catholic church that without indulgence the offender must undergo temporal punishment here or in purgatory. An indulgence cannot be granted for an unforgiven sin, or as a permit to sin in the future, but it can be gained only after the sin has been remitted by repentance. A partial indulgence is granted for a specified length of time, while a total indulgence is a remission of the entire temporal punishment. These indulgences are never absolutely gratuitous, but can be obtained only by those who are in full communion with the church and have resorted to the sacrament of penance, which, after due contrition and confession, is alone sufficient for the remission of the penalty of sin. In the Middle Ages indulgences were granted to those who made pilgrimages, gave alms, or engaged in holy war, and later they were extended for fighting against heretics. The thesis of Luther published in 1517 were directed against the selling of indulgences. In 1563 the Council of Trent reaffirmed the belief that the church has power to grant them, but laid down the principle that indulgences are to be granted gratis.

INDUS (ĭn′dŭs), an important river in the northwestern part of India. It rises in Tibet, on the north side of the Himalaya Mountains, flows northwest, thence makes a bold curve and assumes a course toward the southwest. The length is 1,800 miles. It has a basin of 375,000 square miles, and the delta extends about 130 miles along the coast of the Arabian Sea. Its source is 18,000 feet above the sea, on account of which the flow is rapid in many portions of its course. The Indus is valuable as a highway of commerce and vessels enter safely by a number of the mouths of the delta. Among the tributaries are the Gartok, which enters it before it passes the Himalayas, the Shayok, the Sutley, the Chenab, and the Kabul. It is navigable to its confluence with the Kabul, about 900 miles from the sea. Many edible fish, waterfowl, and crocodiles are abundant. The valley of the Indus is famed for its fertility.

INDUSTRIAL SCHOOL (ĭn-dŭs′trĭ-al), an institution devoted to the dissemination of knowledge in the industrial arts, such as agriculture, mining, dairying, horticulture, etc. Many institutions of this character are supported either jointly by the national and state governments, or by either of them separately. Another class of these schools is maintained as private institutions, in which these arts are combined in courses with other branches of learning. In many the instruction is coextensive to both sexes. The term is likewise extended to many reformatory institutions established under state supervision in which youthful offenders of law and vagrant children are confined for correctional purposes. They aim to teach the arts of industry along with the elements of an education. Many governments support industrial schools of this character for both sexes in different localities. The schools in which industrial and mechanical arts are taught as regular branches of study are abundant in European countries, those of Austria, Germany, Denmark, France, and Russia taking the highest rank.

INERTIA (ĭn-ẽr′shĭ-ȧ), the incapability of matter to change its state, whether that be one of motion or of rest. From this follows the two laws: That a body at rest continues at rest forever unless acted upon by some force; and that a body in motion continues in motion forever unless some counteractive force, like that of gravity, acts upon it. The resistance which, especially at first, a body at rest gives to a force operating to move it, is called the *power of inertia.* Newton established the idea that inertia can be measured and that it is a fundamental property of matter.

INFANT, in law, a person who is too young to bind himself by what he says, or in a contract. In the law of England and America the term is applied to all persons who have not attained their majority, which is reached at the age of 21 years. Females reach their majority in some states and countries at the age of 18 years. In general the term minor is applied to a male who is under 21 and to a female under 18 years of age. Contracts made by infants are not binding, except for necessaries essential to their life and health, and for the purpose of providing for their wants they are subject to their parents or guardians. Though infants may be punished for criminal offenses, the penalty inflicted varies somewhat in degree and kind from that imposed upon adults. The father is the natural guardian of his children until they are

21 years of age, and in case of his death or inability, in some states, this power becomes vested in the mother. An infant cannot contract marriage, except with the consent of the parents or guardians.

INFANTRY (ĭn′fạn-trȳ), the portion of a military system which is armed and equipped for marching and fighting on foot. It constitutes the largest organization of the military forces of all countries and comprises the most powerful branch of an army, but modern warfare has somewhat changed the importance and effective fighting force of the infantry. Formerly the infantry moved upon the enemy in the form of a solid phalanx, sometimes from ten to twelve files deep, but the rapid-fire guns of modern times throw bullets with sufficient force to penetrate several ranks, hence rapid movement and great perfection in discipline is required. The infantryman of Greece was equipped with helmet, shield, and breastplate, and the fighting was done at close range with swords, battleaxes, or javelins. At present firing usually begins at about 600 yards, but this depends upon position and the character of the arms used. From fifteen to twenty miles per day is the average distance marched by infantry. The loss of life in the infantry is ordinarily about three times as great as that either in the cavalry or the artillery. In the late World War, which may be taken as a reasonable basis, the percentage of loss in the German infantry was 17.6; in the artillery, 6.5; and in the cavalry, 6.3.

INFINITE (ĭn′fĭ-nĭt), an unlimited or boundless quantity in space or time. The term is used in mathematics to designate a sum greater than any assignable quantity of the same kind. It is employed in music to designate certain forms, sometimes called *perpetual fugues,* which are so constructed that the performance may be incessantly repeated, their ends leading to their beginnings. The term *infinite* is used as opposed to *finite*, the former being boundless and immeasurably great, while the latter is limited in degree, capacity, or quantity. An *infinitesimal* quantity, although immeasurably small, is greater than zero.

INFLECTION (ĭn-flĕk′shŭn), the term used in grammar to designate the variation of the terminations of nouns and pronouns in declension, verbs in conjugation, and adjectives and adverbs in comparison. The agglutinative languages, as the Turkish and the Hungarian, combine many of the root words, while in the highly inflectional tongues, as the German and Old English, the endings of many words are inflected. In modern English the analytic form has encroached upon the inflectional. However, many philologists have raised the question whether this marks an advance in the expression of ideas.

INFLORESCENCE (ĭn-flô-rĕs′sẹns), the arrangement of flowers upon a branch or stem. When the axis in a flower cluster terminates with a flower, the infloresences is said to be definite; otherwise it is designated as indefinite, indeterminate, centripetal, acropetal, or botryose.

INFLUENZA (ĭn-flů-ĕn′zȧ), or **Grippe**, a contagious and often epidemic catarrhal inflammation of the mucous membrane of the air passages. The early symptoms are similar to those in a cold. It is accompanied by frontal headache, sleepless nights, loss of appetite, discharge from the nose, and feverishness. The affection is not usually fatal, but unless care is exercised it sometimes becomes complicated with bronchitis or pneumonia. Under good care the patient recovers in from four to eight days. In certain seasons and localities it is especially prolific in its spread, and often assumes larger proportions than any other disorder. Epidemic influenza is usually designated *la grippe*.

INFUSORIA (ĭn-fů-sō′rĭ-ȧ), the name of certain microscopic animals, regarded the highest or most specialized class of protozoans. Formerly the name was applied to many kinds of microscopic organisms common to organic infusions, but some of these later became known as forms of vegetable matter. They occur in both fresh and salt water. Several species are parasites on other animals, in which they are sometimes the cause of disease. They are reproduced by division, by budding, and by spore formation.

INGALLS (ĭn′gạlz), **John James**, statesman, born in Middleton, Mass., Dec. 29, 1833; died Aug. 16, 1900. In 1855 he graduated from Williams College, two years later was admitted to the Massachusetts bar, and in 1858 settled in Kansas. He became secretary of the State senate in 1861, and was elected a member of that body the following year. For some time he was editor of the Atchison *Champion*. In 1873 he was chosen United States Senator as a Republican, and was reëlected in 1879, and in 1885. He was president *pro tempore* of the Senate in 1887. Subsequent to 1892 he engaged as a lecturer, writer, and newspaper correspondent, taking high rank and attaining to wide popularity.

INGALLS, Melville Ezra, capitalist, born in Harrison, Me., Sept. 6, 1842. His early life was spent on a farm. He studied at Bowdoin College and Harvard Law School, was admitted to the bar, and began to practice at Gray, Me. Soon after he removed to Boston, where he was elected a member of the State senate in 1867. Soon after he became interested in building western railroads. He promoted the organization of several lines that were consolidated into the Cleveland. Cincinnati, Chicago, and Saint Louis Railway, generally known as the Big Four system. He officiated as president of this system and placed it upon a sound basis, and was president of the Chesapeake and Ohio Railway Company from 1888 until 1900. Besides promoting various transportation lines, he was interested in numerous banks and trust companies.

He was made president of the National Civic Federation in 1905. He died July 11, 1914.

INGELOW (ĭn′jē̇-lō̇), **Jean,** poetess, born in Boston, England, in 1820; died July 20, 1897. She was a student with Elizabeth B. Browning and Rossetti (1830-1894), and attained to a high reputation as a female poet of England. After the death of the former, she shared with the latter the laurel crown of English female poets. Her productions are noted for devotion, originality, and exquisite thoughts. In 1863 a volume of her poems was published, and within five years it passed through fourteen editions. Several volumes followed, the most popular being "A Story of Doom," which appeared in 1867, and "Poems by Jean Ingelow," published in 1887. Her novels include "Fated to be Free," "Off the Skelligs," "Don Juan," and "Sarah de Beranger."

INGERSOLL (ĭn̤′gẽr-sŭl), a town of Ontario, in Oxford County, nineteen miles northeast of London. It is located on the Thames River and the Canadian National Railway, and is surrounded by a productive farming country. The manufactures include cheese, machinery, woolen goods, and farming implements. It has a well-organized public school system, electric lighting, and a number of fine church buildings. Population, 1922, 4,772.

INGERSOLL, Jared, jurist, born in New Haven, Conn., in 1749; died Oct. 31, 1822. He graduated at Yale University and afterward studied in London and Paris, and while in the latter city became acquainted with Benjamin Franklin. In 1778 he returned to America and took up the practice of law at Philadelphia, where he became prominent as an advocate of the American cause in the Revolution. He was a delegate to the Continental Congress in 1780, took part in the convention that framed the Federal Constitution in 1787, and served two terms as attorney general of Pennsylvania. In 1812 he was the unsuccessful candidate for Vice President of the United States on the Federal ticket, and subsequently served as district judge in Philadelphia.

INGERSOLL, Robert Green, lawyer and author, born in Dresden, N. Y., Aug. 11, 1833; died in Dobb's Ferry, July 21, 1899. After receiving a common school education, he studied law and removed with his parents to Wisconsin. Later he settled in Illinois, where he was admitted to the bar. He began the practice of law at Peoria in 1857, and soon became recognized as a lawyer of extraordinary ability. He entered the Federal service in 1862 as colonel of cavalry, was taken prisoner, and soon after was exchanged. In 1868 he became attorney-general of Illinois. In 1876 he nominated James G. Blaine for the Presidency at the Republican convention in Cincinnati, characterizing him as *The Plumed Knight.* This great speech, an oration delivered on Decoration Day in New York in 1882, and his successful defense of the so-called Star Route conspirators in 1883, won for him the reputation of an orator and advocate. He became known particularly for his ability as a lecturer and an opponent to the Bible and the Christian religion. As a rhetorician he was preëminent, his sentences flowing easily and being dressed in beautiful, florid style, alike pleasing to the ear and the sentimental nature. However, his writings are less scientific than those of Herbert Spencer, not as subtile as those of Voltaire, nor as philosophic as the works of Hume. His best known productions include "Some Mistakes of Moses," "The Gods and Other Lectures," "Great Speeches," "Prose-Poems," and "Foundations of Faith."

INGRAHAM (ĭn̤′grȧ-a̤m), **Duncan Nathaniel,** naval officer, born in Charleston, S. C., Dec. 6, 1802; died there, Oct. 16, 1891. He entered the United States navy as midshipman in 1812 and became a lieutenant in 1818. In 1838 he was made commander, became captain in 1855, and the next year was appointed chief of the bureau of ordnance. Among the interesting events of his career is the liberation, in 1853, of Martin Koszta, a Hungarian who had declared his intention to become an American citizen, but was held prisoner at Smyrna by Greeks. In 1861 he entered the Confederate navy, in which he became commodore, and served in a number of important engagements.

INGRAM, Arthur Foley Winnington, bishop of London, born in Worcestershire, England, Jan. 26, 1858. He studied at Marlborough College and Keble College, Oxford, and for some time served as private tutor. In 1884 he was made curate at Saint Mary's, Shrewsbury, became private chaplain to the bishop of Lichfield the following year, and in 1889 was made the principal of Oxford House. He held a number of rectorships and in 1897 was chosen canon of Saint Paul's Cathedral. In 1901 he was made bishop of London, in which position he became distinguished for his wide influence in promoting the work of the Church of England. He made a notable visit to Canada and the United States in 1908. Among his books are "Christ and His Friends," "Work in Great Cities," "The Men who Crucify Christ," "New Testament Difficulties," and "Banners of the Christian Faith."

ARTHUR F. W. INGRAM.

INHERITANCE TAX (ĭn-hĕr′ĭt-a̤n̤s), an assessment on the property passing from a deceased person to his heirs or legatees. The Romans imposed a tax of this kind before the advent of the Christian era, and it has been the source of considerable revenue in the countries of Europe for many centuries. Since the time of Gladstone such taxes are known as *death duties* in England, and this term is applied in many of the British colonies where such assessments are made, especially in Australia and New Zealand. The United States government imposed an inheritance tax during the Civil War, but subsequently it was repealed, and the present national law dates from the period of the Great European War. Inheritance taxes are imposed by a number of the states to raise revenue. In most cases the rate is progressive, graduated on a percentage basis according to the amount inherited and the degree of relationship. Some of the states exempt the smaller estates entirely, extending the free limit in most cases from $500 to $5,000.

INIA (ĭn'ĭ-ȧ), the name of a mammal classed with the dolphin family, of which only one species is known. The body is seven to nine feet in length, and the color is usually pink mixed somewhat with black. It is found in the lakes of Peru and the Amazon and its tributaries. This animal is remarkable in that it resembles a mammal found in the Ganges, and because it is common to waters located a long distance from the sea.

INITIATIVE (ĭn-ĭsh'ĭ-ȧ-tĭv). See **Referendum.**

INJUNCTION, in law, an order issued by a court to restrain one or more persons or corporations from doing some act which they threaten to commit, or to continue the prosecution of some act which is already in progress. An injunction is likewise issued to restore certain rights to a plaintiff. The Romans originated the injunction, but their process, which was somewhat different, was known as an *interdict.* Now these writs are designated as *preventive,* when they are issued to restrain, and *mandatory,* when they operate to restore rights. A *temporary* or *preliminary* injunction is issued to restrain only until the defendant may answer, after which, if good cause is shown, it may be made *perpetual.* Those who disobey an injunction are guilty of contempt of court and may be fined or imprisoned. The term *government by injunction* originated from the employment of the injunctions in restraining interested parties from interfering in strikes and other labor troubles.

INK, a liquid used for writing or printing, the different classes being known as writing, printing, marking, and copying inks. *Writing ink* consists either of finely divided colored precipitates held in suspension in a liquid by means of gum, or of colored liquids. The inks used by the peoples of ancient times were made with especial care to insure blackness and durability, two qualities in which they surpassed most inks of modern manufacture. Black inks contain as ingredients sulphate of iron, gum arabic, and gallotannic taken from gallnuts. Gallnuts also contain pectose, by which gallotannic acid is converted into gallic acid when it is exposed to the air. Durability and blackness in inks are secured by utilizing iron salt with an infusion of gum and gallnuts, and exposing the compound to the air for some time. The addition of carbolic acid, essential oils, crushed cloves, or corrosive sublimate prevents ink from becoming moldy.

Copying ink differs from the ordinary writing ink in being thicker and in drying less quickly. It is prepared by the addition of a little sugar or glycerin to ordinary black ink. *Marking ink* is made of a solution of silver nitrate colored by lampblack and thickened by gum, but some kinds are colored with sap green. *Printing ink* is much thicker than writing ink. It is made by boiling linseed oil and mixing with it lampblack or other pigments, and sometimes soap and rosin are added to give it the proper consistency. Colored inks contain various solutions of coloring matter, such as cochineal and Brazil wood for red and Prussian blue for blue. In printing ink lead chromate is used for yellow, vermilion for red, and ultramarine for blue. The ink used in lithographing is variously composed of lampblack, Paris black with shellac, virgin wax, dry white soap, and tallow or lard. Various kinds of *sympathetic ink* are used in secret correspondence. They leave no trace of color upon the paper, but exposure to heat causes chemical action by which the characters become legible. Substances used for that purpose include lemon juice, solutions of cobalt, and dilute sulphuric acid.

INKERMAN (ĭn̲k-ẽr-mȧn'), a town in the government of Taurida, Russia, situated at the eastern extremity of Sebastopol harbor. It is celebrated on account of a battle that occurred on Nov. 5, 1854, between the Russian army and the allied French and English forces. The Russians led an attack early in the morning under cover of darkness, but were defeated by the allies. On the battlefield is a monument to commemorate the event.

INMAN (ĭn'man̲), **Henry,** portrait and landscape painter, born in Utica, N. Y., Oct. 28, 1801; died in New York City, Jan. 17, 1846. He entered the West Point Academy at an early age, but soon after became interested in the study of art under John Wesley Jarvis, and in 1822 established a studio as a portrait painter. In 1832 he went to Philadelphia and in 1844 visited England, where he painted portraits of Macaulay, Chalmers, and Wordsworth. His productions comprise numerous landscape and historical subjects and excellent portraits of American statesmen, among them Martin Van Buren, William H. Seward, DeWitt Clinton, and Chief Justice Nelson. His best pictures include "Rip Van Winkle Awakening," "An October Afternoon," "Lake of the Dismal Swamp," and "Boyhood of Washington."

INNESS (ĭn′nĭs), **George,** landscape painter, born in Newburgh, N. Y., May 1, 1825; died at Bridge of Allen, Scotland, Aug. 3, 1894. He began landscape painting at the age of 21, visited and studied in Florence and Rome for some time, and returned to New York City in 1868. He resided in Italy from 1871 to 1875 and spent much of his later time in Europe. A memorial exhibition of 240 pictures painted by him sold at auction after his death for $108,670. Inness ranks as one of the most eminent American landscape painters. He had remarkable ability to give his productions a fine coloring and natural expression. Many of his paintings inspire a feeling of moral depth. His best works include "The Valley of the Shadow of Death," "Summer Sunshine and Shadow," "Rome from the Tiber," "An American Sunset," "Peace and Plenty," "Under the Greenwood," and "The Edge of the Forest."

INNOCENT (ĭn′nô-sent), the name of thirteen popes, who reigned between 402 and 1724. Those not specially treated reigned as follows: Innocent II., 1130 to 1143; Innocent IV., 1243 to 1254; Innocent V., from Jan. 20 to June 2, 1276; Innocent VI., 1352 to 1362; Innocent VII., 1404 to 1406; Innocent VIII., 1484 to 1492; Innocent IX., from Oct. 29 to Dec. 30, 1591; Innocent X., 1644 to 1655; Innocent XII., 1691 to 1700; and Innocent XIII., 1721 to 1724. See **Pope.**

INNOCENT I., Pope of Rome, born in Albano; died July 28, 417. According to some writers he was the son of Pope Anastasius I., whom he succeeded as pontiff in 402. During his reign Rome was besieged by Alaric, and when the sack occurred he was on a mission to Ravenna. His rule is noted for its energy and the success with which the influence of the church became extended. Among the events are the dispatch of several letters that mark an epoch in the church and the enforcement of the marriage prohibition among the clergy. He is one of the most distinguished saints of the Catholics, Saint Innocent's Day occurring on July 28.

INNOCENT III., Lotario de'Conti, Pope from 1198 to 1216, born at Anagni in 1161; died in Perugia, July 16, 1216. He studied in Paris, Bologna, and Rome, where he became a cardinal, and at the age of 37 was elected the successor of Pope Celestine III. His rule was the most successful of the popes that bore his name, and he stands high among the entire list of popes. His personal vigor and strength of mind imbued him with lofty purposes, and, since he believed that the successors of Saint Peter were given power over the world as well as the church, it was his ambition to secure ecclesiastical dominion over all countries and sovereigns. The two celebrated orders of monks, the Franciscans and the Dominicans, were confirmed by him, and these he gave vigorous support. Through various agencies he brought the most powerful countries of Europe under his dictation, among them Spain, Germany, Italy, France, and England. The characteristic confusion in the political governments of his time made it possible to carry forward papal supremacy with the most effective progress.

Pope Innocent III. looked upon heresy as a rebellion and regarded every offense against religion as a crime against society, making it the duty of every potentate to treat them likewise. A crusade against the Albigenses was called into action by him, with intent to suppress opposing tendencies and practices. In 1215 the fourth Lateran council was held under his direction. This council established transubstantiation and auricular confession as dogmas of the Catholic Church. Historians credit him with wisdom, a high and blameless character, and high ideals in Christian life. Besides many letters and sermons, he produced a remarkable treatise entitled "On the Misery of the Condition of Man."

INNOCENT XI., Benedetto Odescalchi, Pope from 1676 to 1689, born in Como, Italy, May 16, 1611; died Aug. 12, 1689. He studied law at Rome and Naples, secured a liberal education, and became distinguished because of his forceful and noble character. Innocent X. made him cardinal in 1647, whose successor he became against the opposition of France. His rule marks him a reformer and vigorous organizer. It was his aim to raise the clergy, as well as the laity, to a high moral standard of living, but his rule was opposed by Louis XIV. The latter seized Avignon, a papal territory, in consequence of a notice served by the Pope that he would retain the revenues derived where bishoprics were vacant. Later Louis XIV. sent a fleet to threaten the papal states, but the Pope remained firm and the difficulty was not settled until his successor, Alexander VIII., ascended to the papal office.

INNOCENTS' DAY, a day set apart to commemorate the massacre of the children at Bethlehem, who are called the Holy Innocents and considered as the earliest martyrs in the Christian cause. It is sometimes called Childermas and Feast of Holy Innocents, and is celebrated on Dec. 28th by the Roman Catholic and Anglican churches. The Greek church observes this day on Dec. 29th.

INNSBRUCK (ĭns′prŏŏk), a city in Austria, capital of Tyrol, situated on the Inn River. Its site has an elevation of 1,875 feet above sea level and near it are ranges of mountains from 7,500 to 8,600 feet high. It is well connected by several trunk railroads and electric railway lines. The manufactures include silks, machinery, woolen and cotton goods, ribbons, and gloves. It has considerable trade in merchandise, live stock, and fruits. Its important buildings include a celebrated university founded in 1677, the Franciscan Church, containing an elaborate monument to Maximilian I., a number of monasteries, and an imperial palace. The university has 98 instructors, 1,150 students, and a library of 100,000 volumes. A famous monument of Walther von der Vogelweide stands in a public place. The streets are handsomely improved, being well paved and drained, and are ornamented by many statues and beautiful parks. Population, 1906, 28,065; in 1920, 53,194.

INNS OF CHANCERY, the name of certain buildings in London, England. They were erected as places of residence and study for law students, and formerly were subordinate to the Inns of Courts. Several are still maintained as societies, but now have no public function, and are occupied mainly by solicitors. The principal buildings of this class at present are Clifford's Inn and Furnivall's.

INNS OF COURTS, the four sets of buildings in London, England, that belong to the legal societies in which is vested the exclusive right of admitting persons to practice at the bar. These four buildings are known as Lincoln's Inn, the Inner Temple, Gray's Inn, and the Middle Temple, and they belong to the four legal societies of the same name. They had their origin about the end of the 13th century, and as early as the Middle Ages became famous as schools of law. The members consist of students, barristers, and benchers. Each inn is self-governing under a committee or board of the benchers, who are usually senior council or king's council. This governing board is self-perpetuated. It has the right to admit to the bar, disbar from practice, and reject a candidate without stating its reasons for refusal. One of the benchers is elected annually as treasurer, and this election qualifies him to be the presiding or chief officer. The term *barrister* is applied to all those members who are at least 21 years of age, and who have been called to the bar by the benchers of the inn of which they were students.

INOCULATION (ĭn-ŏk-ū-lā'shŭn), the art of communicating the virus of a particular disease to the system through the skin, or otherwise. Its purpose is to produce a mild form of some contagion and thereby protect the human body against contracting a highly dangerous form of the disease. Emanuel Timoni, a Greek physician, wrote a letter from Constantinople in 1713 favorable to inoculation, but it was not firmly established as a safeguard against smallpox until 1798, when it was introduced by Dr. Jenner. Inoculation is efficient only in diseases which attack the body but once, such as smallpox and measles. A mild form of the disease is experienced by the person artificially inoculated and this protects him against the contagion, but the disease in a dangerous form may be communicated to others.

INQUISITION (ĭn-kwĭ-zĭsh'ŭn), a court or tribunal established by the sanction of the Roman Catholic Church in various countries for the purpose of examining and punishing heretics. This tribunal was suggested by Saint Dominic, but was not founded until in the pontificate of Gregory IX., when a synod at Toulouse, in 1229, resolved upon it, and it became formally established in 1233. The plan instituted carried with it the appointment of a priest and several laymen in every parish for the purpose of bringing heretics before the bishops. Soon after the power of trial was delegated to the Dominicans, and the tribunal became known as the Holy Office or the Holy Inquisition. The practice continued for several centuries, torture being applied in some cases to extract evidence, but in 1560 the power of tribunal courts was transferred to the bishop. The Inquisition was introduced into Italy, France, and other countries, but attained the most widespread influence in Spain. In that country were large numbers of Mohammedans and Jews, who professed Christianity for the sake of shelder from persecution, but continued the practice of their religious rites and even sought converts to their respective faiths.

In 1481 the Inquisition was established at Seville under formal sanction of Ferdinand and Isabella. Two Dominicans were made the first judges. Later it extended to other towns, where it was popular among the clergy and lower orders, but was opposed by the middle classes and the nobles. Fully 2,000 persons were held by the Inquisition the first two years and burned alive. In 1571 it was introduced into Mexico and Peru. Napoleon I. suppressed it in 1808, and it was likewise abolished by the Spanish Cortes in 1813, but was reëstablished in 1814 and again abolished in 1820. The decree of Napoleon in 1808 against the Inquisition abolished it in Italy, but Pius VII. restored it to Rome in 1814.

The Inquisition never became established in England. When Conrad of Marburg made an attempt, in the 13th century, to establish the Inquisition in Germany, he was assassinated, and it never gained a firm foothold there. Juan Antonio Llorante (1756-1823), a Spanish historian, estimates that the victims of the Spanish Inquisition, in the period of 481 to 1808, numbered 341,021 persons, of whom 32,000 were burned alive and 17,659 were burned in effigy. In 1848, when the dungeons of the Inquisition were opened in Rome, a powerful sentiment was created throughout Europe against the institution and the Papacy, causing the practice to decline. However, Archbishop Spalding and other creditable authorities assert that it is difficult to prove an instance of death for heresy at Rome. The Inquisition is now known as the Congregation of the Holy Office, under which the press censorship has been supervised for some time. The purpose is to suppress so-called heretical literature.

INSANE ASYLUM (ĭn-sān' ȧ-sī'lŭm), an institution established for the care and treatment of the insane. The monasteries were the retreats of those who suffered with unsoundness of the mind in an early period of the Christian era, and out of these grew the bedlams, or bethlehems, formerly common to England. In many countries the insane were greatly neglected. They were imprisoned, tormented, and even executed as criminals. A more humane view was taken as civilization advanced, and they came to be looked upon as specially unfortunate or stricken for some mortal sin by the Divine. However, asylums for the insane are strictly modern institutions, and they may be said to date from the early part of the 19th century. They are maintained chiefly as institutions belonging to the state or province, and are open to all who are adjudged insane after due examination by a competent committee or commission. In some instances the afflicted are kept at the state asylum until they are cured or until it becomes established that they are incurable, and in the latter case they may be turned over to the authorities in the county from which they were sent, when they are placed as incurable inmates in a county hospital. The treatment of the insane is conducted on a humane basis, at the expense of the state, and a large number of cures are reported every year.

INSANITY (ĭn-săn'ĭ-tȳ), a general term applied to disorders of the intellect, or unsoundness of the mind. The nervous textures are primarily involved in this disease. Since the mind manifests itself by the brain, a restoration of the perverted functions of the brain by appropriate treatment of its structures is necessary to effect a cure. Many terms are employed by medical writers to designate the different phases of insanity, but the most common are idiocy, mania, dementia, melancholia, cretinism, and aberration. *Idiocy* is a congenital or an acquired defect of the mental faculties, and prevails as a total want or partial defect of the understanding. Malformation of the cranium or brain is a common origin of congenital idiocy, while a disease of the brain, mechanical injury to the brain, or excessive sensual indulgences may result in acquired idiocy. *Mania* is a form of furious insanity resulting from disorder of one or more of the faculties, and is generally accompanied by frenzy and blind impulses.

Dementia differs from idiocy in being curable. It is a gradual weakening of the mental powers, such as loss of memory, confusion of thoughts, weak-mindedness, and loss of volition. *Melancholia* is characterized by a depression of the spirits, brooding over mournful ideas, and grieving about a real or apparent loss. This form is brought on by failure in matters of business, love, religion, and personal ambitions, and not infrequently results in suicide. *Cretinism* is a form of idiocy and is associated with a bodily malformation. *Aberration* is a form of mental eccentricity. It is manifested in rambling thoughts and by error in perception, and is due largely to an abnormal state of the perceptive faculties.

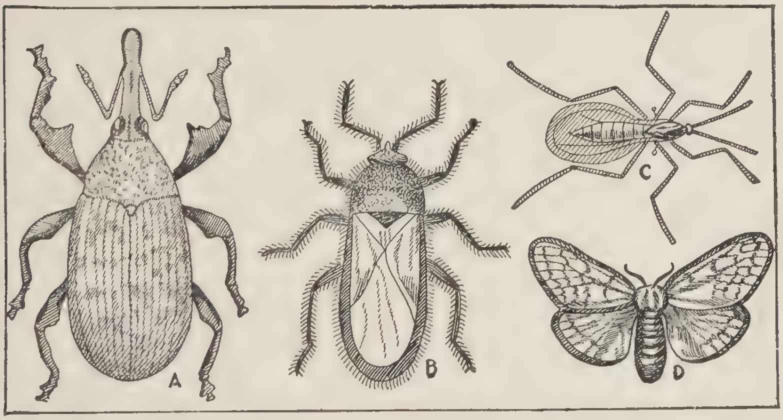
Institutions for the care and treatment of the insane are maintained by provincial or general governments in all civilized nations. Marked strides of advancement have been made in these institutions, though insanity is apparently on the increase. It is of interest to note that the excessive use of tobacco at an immature age and the intemperate use of alcoholic drinks, opium, and morphine are prolific causes, and that during the time of financial panics the per cent. of insane cases, like suicide, are most numerous. Insanity is an excuse in law for the commission of acts which in others would be crimes, for the reason that an insane person has no intention. It likewise deprives a person from entering into any valid contract.

INSECTICIDE (ĭn-sĕk'tĭ-sīd), a preparation used for destroying insects. The insecticides are in many cases similar to the *fungicides*, which are used for destroying fungi. Agencies to destroy insects are especially valuable in horticulture, since otherwise the plants are defoliated and the fruit is injured. Various devices and methods are employed for this purpose, but the application of poisonous substances through the spray pump or some similar device is in most common use. However, they must be applied with much care, else the person engaged in the work may become poisoned, or the application may be made at a time when the fruit itself will be injured or rendered unwholesome. The best time to spray the plants is when the insects or fungi make their first appearance. All parts of the plant should be carefully sprayed, which usually requires a ladder, especially where the application is to be made to bushes and trees. Plants should not be sprayed while they are in blossom, especially those from which the fruit is to be used.

The successful application of insecticides depends upon the insect coming in contact with the poison, or in absorbing a part of it while feeding upon the sap or leaves of the plant. A good solution for spraying consists of adding one pound of slaked lime to twenty gallons of water, to which two ounces of Paris green is added before mixing. An arsenite of lime obtained in the manufacture of aniline dyes, known as London purple, is used in the same way as Paris green, but it is somewhat more caustic on the foliage Sucking insects can be destroyed by an emulsion of kerosene. It may be prepared by dissolving a pound of hard soap in a gallon of hot water, to which a gallon of kerosene is added and thoroughly mixed. This may be diluted by twenty gallons of water, if a strong solution is wanted, and about twice that amount may be added for a weak solution. Scale insects and bark lice common to fruit trees may be destroyed by using a lye wash. The principal fungicides are made of sulphur, copper carbonate, and copper sulphate.

INSECTIVORA (ĭn-sĕk-tĭv'ō-rȧ), an order of placental mammals, including about 250 species, none of which is large in size. They are so named because they subsist largely on insects, although many are not exclusively insectivorous. Nearly all of the animals belonging to this order are timid and nocturnal in their habits, and they serve the useful purpose in nature of counteracting an undue increase of worms and insects. The molar teeth are fitted to break the coverings of insects, the legs are short, and most species step squarely on the soles of their feet. This order of mammals includes the mole, hedgehog, and shrew.

INSECTS, a group of anthropods known as the class *Insecta* or *Hexapoda.* They comprise the most numerous class of animals, of which the typical species have their bodies divided into three parts—the head, the thorax, and the abdomen. Formerly centipedes and spiders, and some other animal forms, were enumerated with the insects, but now only animals having three pairs of legs are classed as insects. However, a perfect classification has not been established. Linnaeus classified the insects into the seven groups known as the *Coleoptera,* or the beetles; the *Diptera,* or the two-winged insects; the *Hymenoptera,* or gauze-winged insects; the *Lepidoptera,* or the moths and butterflies; the *Hemiptera,* or stinging and sucking insects; the *Orthoptera,* such as the grasshoppers and cockroaches; and the *Neuroptera,* or those having membranous wings and mouth organs fitted for chewing. The legs of insects are all affixed to the thorax, have from six to nine joints, and are designed to move with facility, enabling the insect to walk, run, swim, and in a few cases to facilitate flight. Two pairs of wings are present in most species, though in some one or the other of the pairs may be wanting. Two antennae or feelers facilitate movement, or rather aid in guarding against danger, while the eyes are in pairs, but usually compound. The respiration is by air tubes or trachea, which extend through every part of the body.



A, Cotton Boll Weevil; *B,* Chinch Bug; *C,* Hessian Fly; *D,* Cotton Boll Moth.

The typical insect has thirteen segments, one of which constitutes the head, three the thorax, and nine the abdomen. The mouth is of two forms, masticatory and suctorial; the former is typified in the beetles and the latter in butterflies and mosquitoes. The organ of circulation is called the dorsal vessel and consists of a contractile organism with circulatory functions. The alimentary canal is constituted of a gullet, crop, gizzard, stomach, and intestine, and terminates in a cloaca. A series of ganglia make up the nervous system. Most insects are oviparous, the sexes are in different individuals, and the reproduction is sexual, but in some species nonsexual reproduction occurs.

Most species of insects have a more or less horny skin, and all pass through three stages of development. These phases of life include that of caterpillar, larva, or grub; that of the chrysalis or pupa; and that of the perfect winged insect or imago. The life of an insect depends somewhat upon climate and season, though the larval state is of longest duration, and that of the perfect insect is the shortest. Some species die immediately after laying their eggs, others live the remainder of the season, and some endure a number of years, as in the case of the queen bee, whose life sometimes extends to a period of five years. Most insects have ample means of protection, though this exists principally in their ability to fly rapidly, and some protect themselves by defensive organs, as in the case of hornets and bees. It is thought that there are fully a half million species of insects, but about 200,000 are known, and these are more or less confined to particular regions. Thus, the insects of China differ from those of Europe, and those of North America are noticeably different from the species which are common to other grand divisions. However, some of the species are widely diffused, of which the painted lady butterfly is a noted example.

Many species of insects are cumbersome pests to man. Some display great hostility and almost constitute a barrier to his success in some portions of the earth, yet they are a very necessary and useful part of nature. Among the helpful purposes they serve are that they fertilize plants, furnish food for birds, beasts, and reptiles, and consume much of the decaying matters that would otherwise render the climate of some regions extremely unhealthful. They pervade nature everywhere. Some burrow in the ground, bore in trees, live under and above water, or thrive on and in plants. Many species subsist in other insects or larger forms of life as parasitic animal forms.

Among the most useful insects is the bee, which furnishes honey and in some countries produces beebread for the support of human life. Silkworms yield material for clothing, and their culture is a vast industry in many countries. The common wood ant is used extensively in Europe for the manufacture of vinegar, and in France as a valuable material in producing flavoring. In some countries the locusts, though destructive to vegetation, constitute a valuable food for man an animals. The cochineal insects supply a valuable coloring matter, while even the grub is a useful article of food in the West Indies. The bee furnishes wax, the blister beetle supplies useful irritant juices, and others serve like economic purposes.

Among the insects which are most injurious to man may be named the Hessian fly, potato bug, chinch bug, army worm, cotton boll weevil, cotton boll moth, and grasshopper, all of which attack growing crops. The moths, lice, fleas, bedbugs, mosquitoes, flies, ants, and others invade the home, if proper precaution is not taken. Though generally pestiferous, the mosquito is a source of much good in that it is utilized in Central Africa for the manufacture of a form of cakes and serves a wise purpose in devouring decaying substances. While insects inhabit practically all parts of the world, they are much more abundant in tropical climates, where they live longer and attain to larger forms than in the colder zones. Among the noted persons who have written extensively on insects and made valuable discoveries are Aristotle, Humboldt, Linnaeus, Cuvier, Marcello Malpighi (1628-1694), Haeckel, and Pasteur. In America, as in Europe, many experimental stations are maintained in connection with colleges of agriculture for the purpose of investigating the uses of insects and the agencies that operate to destroy them. Besides, it is aimed to discover new species which are still unknown in their ravages, such as the minute forms in France which for years destroyed the grape industry. However, these and many others have been successfully counteracted by the application of destructive agencies. Among the substances used against insect pests are Paris green, London purple, sulphur, hellebore, kerosene, soaps, tobacco, lime, naphthalene, and arsenate of lead.

INSESSORES (ĭn-sĕs-sō′rēz), a name applied by many writers to a large order of birds, which includes the perchers. The order embraces all those that live habitually among trees, excluding only the climbing birds and the birds of prey. Their feet are adapted to walking and perching. They possess much contriving ingenuity in building their nests. The order of insessores embraces all the more noted and beautiful birds of song.

INSOMNIA (ĭn-sŏm′nĭ-ȧ), or **Sleeplessness,** a condition due to some emotional disorder, such as exhaustion, worry, or excitement. It is treated by removing the cause, if it can be ascertained, and by applying hygienic measures. Although in practice it is customary to resort to drugs, ventilation, careful dieting, massage, and hot baths are the best curative agents.

INSPIRATION (ĭn-spĭ-rā′shŭn), in theology, the influence exercised upon the human mind by the Holy Spirit, through the influence of which the understanding is widened and all the mental faculties are quickened. It is in this sense that the term inspiration is used in regard to the Scriptures, which are held to be the writings of men who were inspired by the divine mind to reveal and communicate to man what is essential for his salvation. However, the degree and extent as well as the mode of inspiration are subjects of dispute.

INSTINCT (ĭn′stĭn̠kt), a natural impulse by which animals are directed without reasoning toward the actions that are essential to their existence, preservation, and development. The theories advanced regarding animal instinct include at least three. These are that each species is endowed by the Creator with various faculties and impulses; that the instincts have resulted from consecutive repetition, and these have been transmitted by inheritance to subsequent generations; and that they arise from unknown causes, though the more complex are modified through natural selection and the simpler actions of an instinctive nature. In some animal forms the instincts are developed to a high state of perfection, as is the case in bees, by which they are enabled to construct cells with a perfection that would tax quite highly the reasoning powers of man, and he would be able to secure equal results only by the application of the higher mathematics. Darwin thought that animals in the past as now have varied in mental qualities, and that those variations are inherited. He likewise thought that by natural selection the instincts of many animals have been developed to a higher degree.

INSTITUTE (ĭn′stĭ-tūt), a scientific body or society established under certain rules for the promotion of some particular object, as a literary or philosophical association. The term is applied in France to the principal society of its kind in the world, which was formed in 1795 by the union of the four principal royal academies—the Académie des Belles-Lettres et Inscription, Académie Française, Académie Royale des Sciences, and Académie Royale d'Architecture. Since 1848 it has been known officially as the Institut National de France, but English writers usually term it the Institute of France. At present this great institution embraces five distinct divisions, each of which represents a particular field of knowledge. The divisions are Académie Française, Académie des Beaux-Arts, Académie des Sciences, Académie des Inscriptions et Belles-Lettres, and Académie des

Sciences Morales et Politiques. In each division is a distinct organization, but all are closely affiliated, and the control of the finances of each academy is under a distinct board. Membership is for life, with a salary of 1,500 francs. To become a member of this celebrated organization is a worthy ambition of every Frenchman of educational advancement.

INSTITUTIONAL CHURCH (ĭn-stĭ-tū′-shŭn-al), the name given to a form of organization in a church or society to distinguish it from the so-called ritualistic church. In the former it is made an objective point to secure the general development of the individual, a line of training that involves mental, physical, and moral elevation through personal activity, while in the ritualistic church the belief, sacraments, and forms of worship are emphasized. Besides calling upon the members for personal work along religious lines, the institutional church required activity in social, educational, and physical effort. To promote these lines extensively, it is made an objective point to establish libraries, gymnasiums, employment bureaus, hospitals, night and day classes, and lecture courses, in all of which the Christian work is made an important feature. In 1894 the Open and Institutional Church League was organized in New York City. It is supported by a number of prominent so-called institutional churches, including the Berkeley Temple, Boston; People's Palace, Jersey City; Pilgrim Church, Cleveland; People's Church, Saint Paul; Plymouth Church, Indianapolis; Judson Memorial, New York; the Tabernacle, Denver; All Souls' Church, Chicago; and People's College, Detroit.

INSTRUMENTAL MUSIC (ĭn-stru-mĕn′-tal), the music which is produced by instruments, as distinguished from singing or vocal music. Purely instrumental music was known in ancient Greece, and it is said that the flute was played publicly at the Pythian games. However, the art of arranging the part of a composition for the orchestra, which is known as *instrumentation,* is of comparatively recent origin. Johann Sebastian Bach is properly regarded the originator of modern instrumentation, and his masterpieces are unrivaled even at the present time. Proficiency in instrumentation, which is also called *orchestration,* requires a thorough knowledge of music and of musical instruments, since some instruments sound chords in a manner to produce exquisite harmony, which, when sounded by others, result in discordant strains. Beethoven, Hayden, Mozart, Schubert, Wagner, and Weber are among the celebrated masters of orchestration.

INSULATOR (ĭn′sū-lā-tẽr), a body or substance which offers great resistance to the passage of electricity. A body that carries the charge readily is called a *conductor,* while one which carries it with difficulty is termed an *insulator.* Wire is a good example of the former, though it is not an absolute conductor, since there are no substances that act as perfect conductors or insulators. Among the more notable insulating materials are glass, paper, silk, shellac, gutta-percha, and dry wood. Both temperature and moisture have a decided effect upon the conductivity of bodies. Dry air is an insulator, while moist air is a conductor. Porcelain and glass cones are used as insulators at points where telegraph and telephone wires are supported on posts or brackets. Wire carrying currents for electric lights usually pass through porcelain cones adjusted in the woodwork of buildings, thus furnishing insulation as protection against electric sparks that may result through a short circuit, or otherwise, in case the covering of the wire becomes impaired.

INSULIN, the extract derived from a portion of the pancreas and now used successfully in treating patients who are affected by diabetes mellitus. The pancreas consists of two types of tissue—the granular masses that secret the pancreatic juice, which reaches the intestine through the pancreatic duct, and groups of cells scattered throughout the gland, rich in a supply of blood, known as the islands of Langerhans, so-named from Dr. Langerhans, a German physician. It is now thought that diabetes is caused by a failure of these "islands" to function, that is to fail to effect the oxidation of excess sugar in the blood.

F. G. Banting, the renowned young doctor of Canada, who conducted extensive experiments at the University of Toronto in 1922, discovered how to separate the secretions used in preparing insulin from the digestive fluid of the pancreas of animals, such as swine, sheep, and cattle, and also the method of successfully applying this preparation to patients who are affected by diabetes mellitus. Insulin is protected by patents and is now prepared in ample quantities to supply the medical profession. The government of Canada, in recognition of his valuable services to mankind, awarded an annuity of $7,500 to Dr. Banting.

INSURANCE (ĭn-shur′ans), a system by which a company, in consideration of a sum of money paid, becomes bound to indemnify the insured or his representatives against losses by accident, fire, or storm, or, in case of life insurance, to pay a certain amount in the event of death. The different classes of insurance now recognized include principally fire and lightning insurance, life insurance, accident insurance, marine insurance, and insurance against cyclones and tornadoes. *Marine insurance* is the oldest form, and was instituted by many governments in the Middle Ages.

At present insurance has assumed vast proportions and represents a large volume of accumulated capital. It has become greatly diversified, each class of insurance being subdivided into many departments and covering greatly diversified classes of risks on life and property. Some of the most beautiful and costly buildings in the world are owned by insurance companies as an investment, and they likewise hold large interests in government and railroad bonds, canal securities, stocks, farm and city loans, and mining stocks and bonds. In the insurance business two distinct classes are recognized, mutual and stock companies. The mutual insurance companies are the newer and represent organizations in which the individual insured participates in all the profits of the company and contributes directly in case of losses, while in stock companies individuals are insured for a definite amount and receive definite payments in case of loss. Besides these classes are fraternal insurance companies, in which the fraternal and insurance features are combined in a society or in an association. In this class and several others the assured is assessed each month to cover the losses by deaths. Mutual companies are maintained to a considerable extent among farmers and other classes, in which they insure each other against property losses by fire, lightning, or storms.

Life insurance is based upon the experience of different companies, on which they assume risks and calculate their sources of profit and loss. Below is a synopsis of an insurance table, in which is shown the experience of thirty life insurance companies:

AGE, YEARS.	DEATHS PER 1,000	LIFE EXPECTATION IN YEARS.	AGE AT PROBABLE DEATH IN YEARS.
20	7.29	41.49	61.49
30	8.43	34.43	64.34
40	10.36	27.28	67.28
50	15.94	20.18	70.18
60	30.34	13.77	73.77
70	64.93	8.54	78.54
80	140.41	4.78	84.78
90	323.73	2.11	92.11
99	1,000.00	.50	99.50

A number of terms are used in the insurance business, these being recognized both in law and contracts as more or less clearly implying certain parties or facts. Among them are the terms *underwriter* or *insurer*, meaning the party taking the risk. The *assured* or *insured* is the party who is promised compensation in case of loss. The *premium* is the amount paid for insurance, the *policy* is the written contract, the *risks* or *perils* constitute the events insured against, and the *insurable interest* is the interest, subject, or right to be protected. The laws of all the civilized countries have been constructed with a view of bearing upon the insurance interests and protecting the assured against fraud or loss by unsound companies. In all companies the premium paid is governed by the nature of the risk taken. Property which is exposed to unusual danger requires the payment of a higher premium, while the age and class of individuals influence largely the premium in life insurance companies. Although the adjustment of these matters is left largely to individual companies, they are under legal supervision, and adequate security to the insured is explicitly demanded under all circumstances.

The enormous business done by life insurance companies of the United States has had more or less attention the past decade. Two hundred companies wrote $11,116,763,140 of new insurance in 1925, and the new policies of these companies for the last three years were $24,360,000,000, which is several billion more than all insurance in force in the country twenty years ago. To obtain the business in 1925 premiums amounting to about $80,000,000 were paid. Fully $52,000,000 of the premiums went for commissions to solicitors and $11,000,000 was paid for establishing agencies for advertising. New York City has some of the largest life insurance companies in the world, such as the Metropolitan Life, the Equitable Life, the Mutual Life, and the New York Life. In 1928 a total of 26,888,026 life insurance policies were in force, and the total amount insured was $64,531,069,858, or a little more than $2,500 to the policy. These figures do not include industrial life insurance, which aggregated $15,885,213,732, held by 81,724,732 policy holders.

INTELLECT (ĭn'tĕl-lĕkt), the power or faculty of the human soul by which it knows. It is sometimes defined as the soul acting. Ideas are communicated to us by the senses or by other means. Through the intellect the soul becomes able to perceive objects in their relations, upon which depends its power of judging, reasoning, and comprehending. It is distinguished from the other two powers of the soul; namely, the power to feel and the power to will.

INTEREST (ĭn'tẽr-ĕst), an allowance or premium for the use or detention of money. The profit paid on borrowed money is called *interest*, the money on which interest is paid is termed the *principal*, and the interest and principal taken together constitute the *sum* or *amount*. Interest is either simple or compound. *Simple interest* is computed at a certain rate for the whole time on the loan. *Compound interest* arises when the simple interest is not paid when due. To illustrate: $100 at six per cent. for one year amounts to $106. For the second year the principal is $106, the interest is $6.36, and the amount is $112.36. The rate of interest depends upon various conditions, among them the amount of money in circulation in a given country or state, the demand for money, the amount offered for investment, and the nature of the security offered, or the personal liability of the borrower. The *legal rate* of interest is a rate allowed by law, and any excess charged is termed *usury*. In some states a rate higher than the legal rate may be provided by contract, as in Iowa, where the legal rate is six per cent., but by contract eight per cent. may be stipulated. Contracts providing more than the rate of interest allowed by law are void and not collectible.

INTEREST, in mental science, the excitement of feeling, either pleasant or painful, which accompanies special attention to some object. It involves a more or less conscious recognition of some relation to self, and is essential to the best success of any mental effort. To awaken interest in worthy things, as in the subjects of instruction, is an indispensable condition to the true success of the teacher. Primarily the young pupil feels no interest in the school studies, since the immature mind is unable to appreciate their importance and has no desire to acquire a knowledge of the subjects of which they treat. But the skillful teacher is able to stimulate curiosity and impress upon the mind of the pupil the idea that he is acquiring knowledge, and thus to awaken an interest in the process of instruction. It is easy to sustain the interest when these processes are appropriate and natural, and a lack of interest is usually due either to previous defective teaching or to the endeavor to teach subjects for which the mind of the pupil is not prepared. Psychologically the mind has as much appetite for knowledge of the right kind as the body has physically for proper food. Hence, the teacher needs to study to determine the character of mental food proper for every age, so as to supply the kind that will stimulate and satisfy the mental appetite.

INTERIOR (ĭn-tē′rĭ-ẽr), **Department of the.** See **United States, Departments of the.**

INTERLAKEN (ĭn-tẽr-lä′kẹn), meaning between the lakes, a village of Switzerland, situated in the valley of the Aar, between lakes Brienz and Thun. It was founded by Augustine monks in 1130, and is noted as a favorite health and pleasure resort. About 35,000 tourists visit the place annually. It has an old monastery which was founded in 1130, in which both Protestant and Catholic services are held during the season. The railroad connections are convenient, making it possible for tourists to visit many points of historical interest and witness the most celebrated glaciers and other noted natural sceneries within its vicinity. Population, 1922, 3,041.

INTERMEZZO (ēn-tĕr-mĕd′zō), an interlude inserted between two main parts of instrumental works, such as a drama or an opera. The name is sometimes applied to the entire production, intended to be played independently or between two more extensive pieces. Originally the intermezzos were short musical interludes designed to be performed between the acts of a tragedy. In the 17th century they treated largely of mythological subjects or were comic, and these were performed between two serious acts.

INTERNATIONAL DATE LINE (ĭn-tẽr-năsh′ŭn-ạl), a line drawn arbitrarily near the 180° meridian of longitude, in the Pacific Ocean. This line is located quite closely to the 180° meridian of longitude from the South Pacific to the Bering Sea, whence it passes through Bering Strait. It designates the place where a navigator on a trans-Pacific voyage changes his date of reckoning time. The use of the word international in connection with this date line is sanctioned only by practice, as the principal nations have not created a joint commission to locate such a line definitely, but the term has come into general use and the meridian designated is quite generally accepted by navigators. That the 180° meridian has been chosen is based upon the fact that it is located exactly twelve hours from Greenwich, though this is not essential or material, as any point could have been chosen by agreement or established by practice. However, the fact that it is located near the middle of the Pacific Ocean, a great distance from civilization and populous countries, is a practical reason for choosing this locality, and no doubt this fact offers the best argument in its favor.

The explanation for having a date line is founded on the fact that a person traveling west or east lengthens or shortens his day one hour for every 15° traveled, since he moves with the sun in traveling west and in the opposite direction from the sun in traveling east. In moving eastward, a traveler shortens each day four minutes for every terrestrial degree he travels, and when having gone entirely around the earth he will have gained one day. To him the first of the month is the second, and according to his reckoning Sunday is Monday. On the other hand, a traveler who moves westward lengthens each day four minutes for every terrestrial degree traveled, and if he passes entirely around the earth he will have lost one day when he returns to the point from which he started. To him the second of the month is the first, and Monday to him is Sunday. If two persons were to start from the same place and travel around the earth in opposite directions, they would differ from each other two days in their reckoning, when they met in the place from which they started. The reason for having a date line is clear from this explanation, else it would be impossible to reckon days correctly, and travelers would differ in their time from that kept by people located at considerable distances east or west from the starting point.

INTERNATIONAL LAW, the term applied to what was formerly called the law of nations. It comprises the rules and established doctrines that govern states and nations in their conduct toward one another, and defines the relations of citizens of different countries in their social and commercial affairs. The system was created by modern nations and is recognized by the civilized peoples of the world. New rules are introduced by war and by treaties of peace. Among the more important matters provided for by international law is the equal and common right to sail upon the high seas, where all nations have equal authority to enforce their own laws and the established laws of nations. The domains of other nations cannot be interfered with, and, if a fugitive from justice escapes into a foreign state, the nation from which he escaped has no right to enter the foreign country for his arrest, but may request that he be surrendered.

The commercial relations of different countries may be regulated by treaty without the interference of other nations, for which purpose all nations may send and receive public ministers or delegations, and their persons and property must be protected properly. Any visiting foreigner is required to obey the laws of the country in which he sojourns, and is entitled to the same treatment as the natives. In making treaties ministers usually treat with each other or with duly qualified representatives, but the compacts formed are not deemed binding and formal until they have been ratified by the respective governments. Liberties are granted to all nations alike for the purpose of extending their navigation, improving commercial and agricultural industries, developing national resources, making exploring expeditions, and establishing trade relations. In the time of war the property of the different nations involved, as well as of the persons engaged in unfriendly acts, are subject to capture anywhere, and neutral nations are bound to maintain impartiality as between the contending countries. Besides, neutral nations are understood to prevent every interference on the part of their subjects in the matter of aiding the hostile country or in any manner giving aid or support to the enemy.

INTERNATIONAL PEACE CONFERENCE, a conference held in The Hague, in the Netherlands, from May 18 to July 29, 1899. It was convened at the suggestion of the Czar of Russia, who advanced an invitation to the principal nations of the world to participate in a conference with the view of securing a gradual reduction of the naval and military armaments. Twenty-six countries of the world participated, and the total delegates in attendance numbered 101. The principal work of the conference consisted of adopting a perfected code of the rules of war, recommending the larger use of balloons in warfare, and recommending that the question of the rights of neutrals and private property be considered by future conventions.

INTERSTATE COMMERCE, the name applied to the trade among the several states of the United States. Though considerable commerce was carried among the states at an early period in history, its rapid development properly began with the construction of railways. In 1887 Congress passed an act known as the Interstate Commerce Act, intended to regulate trade between the states. Previous to the enactment of this law all common carriers, either by rail or water, were permitted to discriminate against individuals or localities in granting rates and providing facilities to carry freights. It was charged that the railroad showed favoritism to certain shippers, and that they granted favorable rates under certain conditions, and, on the other hand, frequently made them exorbitant and oppressive. By the Interstate Commerce Act all this was prohibited, and the transportation companies were barred from concealing the rates charged, from changing rates without due notice, and from pooling the traffic and dividing the profits. This act created a commission of five members, known as the Interstate Commerce Commission, with power to investigate alleged violations of the act and to require reports from carriers in regard to their operations. An important amendment was enacted in 1906, by which the commission became empowered to fix the rates to be charged and to set aside those found to be unreasonable. The operation of the law has been to protect the small shippers against the destructive competition of the larger ones. It has tended toward benefiting smaller communities or cities, in that it operated to cause the rates to be less advantageous to the larger distributing points.

INTESTINES (ĭn-tĕs′tĭnz), the portion of the digestive organ situated below the stomach. It is commonly divided into the small and large intestines. The former has an average length of about 23 feet and includes the duodenum, jejunum, and ileum, while the latter, which extends nearly around the small intestine, includes the caecum, colon, and rectum. The *small intestine* extends from the pylorus of the stomach to a valvelike opening at the entrance of the large intestine, near the right groin. It is from one to one and a half inches in diameter. The first ten inches, known as the duodenum, receives the inflow from the ducts of the pancreas and liver. The upper two-fifths of the remainder constitutes the jejunum, and the lower three-fifths forms the ileum. On the interior are many transverse projections and an immense number of minute threadlike processes called *villi.* These villi stand up and resemble the pile of velvet when immersed in water. Each villus contains a lacteal, a vein, and an artery. Food in the stomach moves forward through *peristaltic action,* which consists of slow and successive contractions of the muscular fibers within the tube.

The *large intestine* is from five to six feet long, from one to two and a half inches wide, and is greatly wrinkled and sacculated. Only a few glands occur in the depression of its mucous membrane, which is smooth and contains no villi. Between the small intestine and the colon is a valve of two segments, which prevents the contents of the colon from returning to the small intestines. Projecting from the lower end of the first part of the colon is a narrow, tapering tube known as the *vermiform appendix.* In this round objects sometimes stop, such as cherry stones, causing pain or inflammation.

INTOXICATION (ĭn-tŏks-ĭ-kā′shŭn), the state produced in the system by the excessive use of a stimulant, such as opium, chloral, belladonna, and alcoholic liquids. The intoxication is acute when a considerable quantity of poisonous substances are taken at once, especially by a person not accustomed to its use. In the first stage of slight intoxication the blood circulates quite rapidly and the nervous and mental processes are stimulated. This state of excitement is soon followed by the second stage, in which the baser traits are manifested and the sense of propriety is lost. In the third stage an intoxicated person suffers from dizziness, stupor, double vision, and greatly weakened consciousness, and in some cases by fits of delirium. Delirium tremens often results from habitual intoxication and sometimes it causes alcoholic insanity. The excessive use of liquor frequently induces vomiting, especially in those not accustomed to it. A cathartic, an emetic, or a Turkish bath may relieve a person when becoming drowsy from intoxication, and in extreme cases a stomach pump may be employed.

INTUITION (ĭn-tū̇-ĭsh′ŭn), the power of the mind by which we obtain ideas and truths not derived through the special senses, nor by an elaboration of the understanding. The products of intuition are termed *primary ideas,* and include those of space, time, cause, identity, being, right, and personal identity. Primary ideas, or primary truths, as they are sometimes called, are all self-evident, as the axioms of logic and mathematics. The ideas derived through the intuitive power spring up immediately in the mind upon the presentation of the proper occasion. They are not the product of sensation or perception, but arise spontaneously. Some writers associate intuition with the instinct. Kant speaks of the intuitive power as the reason, a term quite appropriate, since it appears to be the element of the mind that gives to it a condition of rationality.

INVERNESS (ĭn-vẽr-nĕs′), a town in Scotland, capital of Inverness-shire, on the Ness River, 105 miles northwest of Aberdeen. It is located near the Moray Firth, on the Caledonian Canal, and has railway transportation facilities. The chief buildings include the county hall, the cathedral, an insane asylum, and the Royal Academy. Among the manufactures are leather, cordage, spirituous liquors, woolen goods, ironware, and sailing vessels. It has considerable trade, gas and electric lighting, and substantially paved streets. Inverness was the capital of the Picts. It was destroyed by Charles Stuart in 1746. Population, 1922, 22,103.

INVERTEBRATA (ĭn-vẽr-tē̇-brā′tȧ), a subdivision of the animal kingdom. It includes the animals which have no vertebral column or backbone, and are distinguished from the higher group that possess a vertebral column, the latter being known as *vertebrata.* In the invertebrate animals nothing resembling a cartilaginous spinal column is found, and the more solid portions of the body are on the outside, thus constituting a protective shell, as in the case of the oyster, lobster, and clam. Naturalists now recognize five different divisions of the invertebrate animals: the mollusca, protozoa, annulosa, coelenterata, and echinozoa or annuloida.

INVOLUTION AND EVOLUTION (ĭn-vō̇-lū′shŭn, ĕv-ō̇-lū′shŭn), in mathematics, two operations which are converse to each other. The object of *involution* is to raise a number to any power, which is done by multiplying the number by itself, as $2\times2\times2=8$. Thus, the third power of two is eight. On the other hand, *evolution* is the extraction of a root of any number; that is, by means of it we may find what number, when raised to a certain power, gives the known number. For instance, 64 is the power of some number, and by evolution we find that eight is the square root; thus eight multiplied by eight equals 64.

IO (ī′ō̇), in Greek mythology, the daughter of Inachus, King of Argos, and priestess of Juno. Her beauty attracted the love of Jupiter, and consequently excited the jealousy of Juno, but Jupiter transformed her into a cow to protect her from the intrigues of Juno. Argus, having one hundred eyes, was appointed by Juno to watch over Io. He never closed more than two of the eyes at a time, thus being able to watch constantly, but Jove charmed him to sleep by playing on his magic lyre, and while in a helpless condition slew him. His eyes were subsequently used by Juno to decorate the tail of the peacock. Later Io was restored to her natural form, became the wife of King Osiris, and gave birth to a son called Epaphus, who afterward became King of Egypt. The Egyptians worshiped Io after her death under the name of Isis. Aeschylus recites the story of Io in his work entitled "Prometheus."

IODINE (ī′ō̇-dĭn), a bluish-black non-metallic elementary crystalline substance. When heated it yields fumes of a rich violet hue. Iodine belongs to the halogen group of elements, similar to bromine and chlorine. It is obtained principally from the ash of seaweeds called *kelp,* but occurs likewise in oceanic waters and mineral springs. Iodine is found more or less abundantly in marine molluscous animals, in cod-liver oil, and in certain plants common to the land. The lead, silver, and zinc ores of Mexico and Chile contain this product. It is employed in medicine and photography. In medicine it is used either in the pure state or as iodide potassium, and is useful in the treatment of scrofula, rheumatism, spleen and liver diseases, and many maladies as an agency to kill parasites. It is used in photography to prepare aniline colors and for other purposes. In the treatment of glandular affections, chlorosis, scrofula, and other diseases iodide of iron is a valuable remedy.

IODOFORM (ī-ŏd′ō̇-fôrm), a compound of iodine, carbon, and hydrogen. It is similar to chloroform, but differs from the latter in that the chlorine is replaced with iodine. Iodoform is a yellow crystalline substance with a penetrating odor and a sweetish taste. In water it is nearly insoluble, but it may be dissolved readily in ether or alcohol. It is valuable as a medicine, both as an antiseptic and an anaesthetic. Being a solid, it is not employed as a general anaesthetic by inhalation, but is used as a local application to relieve pain, as in sores and ulcers. It is employed for cold in the head in the form of a snuff, but its disagreeable odor makes it difficult to use in this way.

IOLA (ī-ō′lȧ), a city in Kansas, county seat of Allen County, on the Neosho River, 37 miles west of Fort Scott. It is on the Missouri Pacific, the Missouri, Kansas and Texas, and the Atchison, Topeka and Santa Fé railroads, and is surrounded by a farming and natural gas producing country. The noteworthy buildings include the county courthouse, the high school, and a number of churches. It has manufactures of ironware, brick, cement, clothing, cigars, and machinery. Electric and gas lighting, waterworks, and pavements are among the public utilities. Iola was settled in 1857 and was chartered as a city in 1898. Its prosperity is due largely to the abundance of natural gas in the vicinity and to its extensive smelters and rolling mills. Population, 1925, 7,990.

IONA (ē-ō′nȧ), the modern name applied to the most celebrated island of the Hebrides, an island group lying northwest of Scotland. The length is three and a half miles; breadth, one and a half miles; and area, 2,265 acres. It has a history beginning in 563, when Saint Columba landed with twelve disciples and built a monastery. The soil is exceedingly fertile and from early times yielded extensively. Potatoes, barley, and oats are the chief products. The monastery established by Saint Columbia was the first church of the Picts. It has furnished many interesting pages in the development of the Catholic faith in the British Isles.

IONIA (ī-ō′nĭ-ȧ), the name applied anciently to the most flourishing country of the Ionian Greeks in Asia Minor. According to tradition it was so named from Ion, one of the five Greek tragic poets, reputed a son of Apollo. The Ionian Greeks settled in Asia Minor about 1050 B. C., when they were driven from the Peloponnesus by the Achaians. They built twelve towns of much importance, including Ephesus, Miletus, Smyrna, and Colophon, which formed the basis the Ionian League. All the cities of Ionia were captured by Croesus, King of Lydia. In 557 B. C. the region became a possession of Cyrus, King of Persia, but it was acquired in 331 B. C. by the Greeks under Alexander the Great. In the year 64 B. C. the entire region was added to the Roman Empire by Pompey, and subsequently the Turks devastated and destroyed most of the evidences of early civilization, as the temples and amphitheaters. The Ionic dialect was commonly spoken by the people of Ionia, and was noted for its smoothness on account of containing a large number of vowel sounds.

IONIA, county seat of Ionia County, Michigan, on the Grand River, 33 miles east of Grand Rapids. It is on the Grand Trunk and the Père Marquette railroads. The surrounding country is agricultural. Among the chief buildings are the high school, the county courthouse, the State Asylum for Insane, and the State House of Correction. It has manufactures of clothing, farm machinery, earthenware, and lumber products. Ionia was settled in about 1832 and was incorporated in 1873. Population, 1920, 6,035.

IONIAN ISLANDS, a chain of about forty islands stretching along the southwestern coast of Greece, of which Cephalonia, Corfu, Zante, Ithaca, Paxos, and Santa Maura are the most important. The total area is 1,117 square miles. Much of the surface is mountainous, but the valleys and many of the slopes are fertile. Disturbances by earthquakes have been numerous, but they have not been very destructive. Most of the inhabitants are of Greek descent. They engage in agriculture, fruit growing, and manufacturing. Among the exports are fruits, oil, salt, wine, soap, textile fabrics, and ornamental articles. The Venetians ceded the islands to France in 1797, but they were seized by Russia and Turkey two years later, and by the Treaty of Tilsit were restored to France in 1807. Later they became the scene of various political disturbances, but in 1863 were made a part of Greece, to which country they have belonged since. Population, 1922, 267,095.

IONIAN SEA, the name applied since ancient times to the portion of the Mediterranean which lies between Greece and Italy. It is connected by the Strait of Otranto with the Adriatic. The Gulf of Taranto, on the coast of Italy, is an extension toward the west. It contains the Ionian Islands, which lie near the shore of Greece. An extensive navigation and coastwise trade is carried on in this part of the Mediterranean.

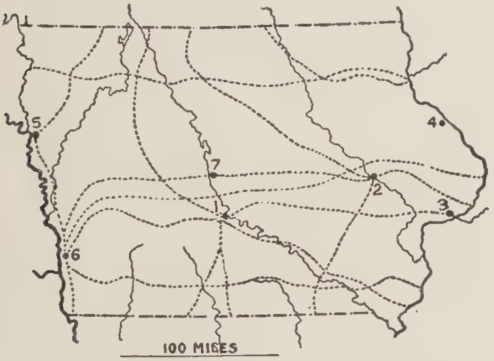
IONIC ORDER (ī-ŏn′ĭk), a style of Grecian architecture that originated in Ionia, and which is distinguished particularly by the capital of the columns. It derived several features from Assyria and entered largely into many celebrated temples erected in Greece and Asia Minor. The best examples still existing include the Acropolis at Athens, the Temple of Minerva Polais, and the Temple of Fortuna at Rome. A modified form of this order is known as the Roman-Ionic, of which the last named temple is a representative. See **Column.**

IOWA (ī′ō-wȧ), a west central state of the United States, popularly called the *Hawkeye State*, situated between the Mississippi and Missouri rivers. It is bounded on the north by Minnesota, east by Wisconsin and Illinois, south by Missouri, and west by Nebraska and South Dakota. Its length from east to west is about

300 miles, its breadth from north to south is 200 miles, and the area is 56,025 square miles. The eastern boundary is formed by the Mississippi River and the western by the Big Sioux and the Missouri rivers.

Description. The surface is an undulating plain, watered by numerous streams. It has an average elevation of about 900 feet and has no mountains. The lowest point of the State is at the junction of the Des Moines and Mississippi rivers, which is 445 feet above the sea, while the most elevated point is in Dickinson County, near Spirit Lake, where the elevation is 1,690 feet. Along the Mississippi and Missouri rivers are bluffs ranging from 200 to 400 feet above the valleys, which are from one to twelve miles in width. The northern half of the State is more nearly level than the southern half, and along some of the interior rivers, especially the Des Moines, are rugged hills and rocky canyons.

The drainage of the greater part of the State is into the Mississippi, but the western and southern portions are drained into the Missouri. The divide between the two systems runs from southeast to northwest, about two-thirds being drained toward the southeast into the Mississippi. A greater part of the central portion of the State is drained by the Des Moines, which rises in Minnesota, flows in a general direction toward the southeast, and discharges into the Mississippi at Keokuk. The Boone and Raccoon are its principal tributaries. Other rivers flowing into the Mississippi include the Turkey, Red Cedar, Iowa, Skunk, and Wapsipinicon. The Big Sioux, Little Sioux, Soldier, and Nishnabotna flow into the Missouri. A number of streams which discharge into the Missouri cross the boundary on the south, including the Nodaway and Grand rivers. Several lakes are located in the north central part, near the line of Minnesota. These include Clear Lake, Spirit Lake, Okoboji Lake, Storm Lake, and Swan Lake.



IOWA.

1, Des Moines; 2, Cedar Rapids; 3, Davenport; 4, Dubuque; 5, Sioux City; 6, Council Bluffs; 7, Boone. Chief railroads are indicated by dotted lines.

Climate. The climate is similar in all parts of the State and varies mainly on account of latitude, the altitude not being sufficiently diversified to affect it materially. In type it is continental, having a wide range of temperature between winter and summer. The average annual temperature is about 48°, but in the southern part it is notably higher than in the northern section. The extremes of summer range from 90° to 100° in July and August to from 10° to 20° below zero in winter. All parts of the State have an abundance of rainfall, which averages 31 inches, and the greatest amount of precipitation occurs in the spring and summer months. Considerable snow falls in the winter, but there is rarely sufficient in the southern part to make sleighing possible, except for short periods at rare intervals.

Mining. Iowa has an extensive area of bituminous coal beds, which include about the southeastern quarter of the State. In the output of this product it exceeds all the states west of the Mississippi River except Colorado. The veins are from two to seven feet thick, and in some places there are two workable veins of marketable coal. Mahaska, Wapello, Appanoose, Monroe, Polk, and Boone counties are among those that have extensive interests in coal mining. In 1922 the output was 4,500,000 tons. Valuable deposits of lead ore occur in the northeastern part of the State, in the vicinity of Dubuque. Gypsum is mined extensively near Fort Dodge, in Webster County, which is noted as a center for the manufacture of cement. Limestone, sandstone, and fire and potter's clay are widely distributed. The supply of building stone of the finest quality is inexhaustible.

Manufacturing. The State has shown a steady advancement in manufacturing enterprises the past two decades. This is accounted for by the abundant coal supply and the presence of other raw materials, which includes large quantities derived from agricultural sources. It takes third rank in the manufacture of dairy products, including cheese, butter, and condensed milk. The slaughtering and meat-packing industry produces a large part in value of the manufactured products of the State. Flour and grist mill products are considerable, including principally wheat flour, corn meal, and oatmeal. The manufacture of pearl buttons is an important enterprise at Muscatine and other cities on the Mississippi, in which is obtained a freshwater mussel valuable for its shell. Other manufactures include machinery, cement, brick and tile, earthenware, pottery, canned goods, oat meal, washing machines, clothing, cigars, and farming implements.

Agriculture. Iowa is one of the leading agricultural states, and at present exceeds all others in the value of farm products. It contains practically no waste land unfit for farming, the only exception being the rugged margin of its larger streams, but these are valuable for pasturage. There has been a noticeable decrease in the size of farms, which average about 150 acres. Over 86 per cent. of the area included in farms is improved, and the soil is sufficiently fertile to produce abundantly without artificial fertilizers. Though formerly almost exclusively prairie land, the State is now well dotted with fine groves planted artificially, and belts of hard timber extend along the streams. A fine growth of native grasses furnishes a supply of hay or serve for pasturage, but the larger part of the hay grown is now obtained by cultivating clover, timothy, and alfalfa. Cherries, grapes, apples, and small fruits thrive in all parts of the State. Peaches are grown successfully in the southern section.

Corn is the chief crop and in value is about equal to all the other crops. The State usually holds first place in the production of both corn and oats, but in the yield of corn it is sometimes exceeded by Illinois. Wheat is grown most extensively in the northern part. In the production of barley the State takes second rank. Other important crops are rye, buckwheat, flax, potatoes, vegetables, and sorghum. The abundance of land suitable for pasturage and the growing of hay places Iowa among the leading stock-growing states. It usually takes first rank in rearing swine and second rank in the number of cattle, being exceeded in the latter only by Texas. Cattle are grown for meat and for dairying purposes. In the number of milch cows it exceeds the State of New York, which long held first place. Other farm animals include horses, mules, sheep, Angora goats, and poultry. The grade of stock raised has been highly improved by careful breeding, this being true especially of milch cows and draft horses. Large quantities of fatted swine and beef cattle are exported to the markets of Chicago, Kansas City, and Omaha.

Transportation. The navigation is confined to the two border streams, the Mississippi and the Missouri, both of which are navigable the entire distance. However, the construction of railroads and electric railways has made the navigation of these streams less important than formerly. Texas is the only State west of the Mississippi River that exceeds Iowa in railroad mileage, the lines of the latter comprising 9,500 miles. Trunk railway lines extend across the State from north to south and from east to west, and the latter include a number of the important links in the transcontinental avenues of transportation, such as the Chicago, Milawukee and Saint Paul, the Chicago and Northwestern, the Chicago, Rock Island, and Pacific, the Illinois Central, and the Chicago, Burlington and Quincy. Every county has one or more railway lines. Interurban electric railways are operated in many sections of the State. The commerce has shown a steady growth during every decade since the Civil War. Among the chief articles of trade are manufactures, live stock, hay, grain, dairy products, meat, buttons, coal, washing machines, and foodstuffs.

Government. The present constitution dates from 1857. It vests the chief executive power in the governor, lieutenant governor, auditor, secretary of state, treasurer, attorney-general, railroad commission, board of control, and superintendent of public instruction, the election to these positions being by popular vote for two years. The legislative branch consists of fifty senators elected for four years and 107 representative selected for two years. The senators are divided numerically into two classes, hence the senate is a continuous body, the term of one-half of its members expiring every two years. A supreme court of six judges, elected for six years, constitutes the highest judicial tribunal. Subordinate to it are the district courts, which have jurisdiction in districts that are composed of several contiguous counties and are presided over by two to four judges, who are elected for four years. Superior courts may be established in the cities by a vote of the people. The county and township officers are elected by popular vote and administer local government.

Education. Iowa has long occupied a foremost position in educational affairs, its per cent. of illiteracy being among the lowest. Only 1.1 per cent. of the population over ten years of age are unable to read and write, as compared with 6.6 for the whole country. This condition has been brought about in part by compulsory school attendance laws, which require attendance from seven to fourteen years of age. The schools are supervised by a State and by county and city superintendents. Adequate and articulated courses of study are pursued in all the schools, making it possible to assign studies in consecutive order as pupils are promoted from the lower to the higher departments and institutions. The State University of Iowa, at Iowa City, is at the head of the educational system and is supported partly by contingent fees and partly by state appropriations. Iowa has a larger school fund, obtained chiefly from the sale of school lands, and the income together with local taxation furnish adequate support. Candidates to become teachers are examined either by the county superintendent or the state board of examiners, but all the licenses, or certificates, to teach are issued under the direction of the state department. A large and well equipped State normal school is maintained at Cedar Falls and the Iowa College of Agriculture and Mechanical Arts is at Ames. Among the many private institutions of higher learning are the Drake University, Des Moines; Grinnell College, Grinnell; the Cornell College, Mount Vernon; the Central College, Pella; Morningside College, Sioux City; the Luther College, Decorah; the Ellsworth College, Iowa Falls; the Des Moines University, Des Moines; the Simpson College, Indianola; the Columbia College, Dubuque; the Wartburg College, Clinton; Coe College, Cedar Rapids; and the Tabor College, Tabor.

Ample provisions have been made for the unfortunate and to provide punishment for the incorrigible. Asylums for the insane are located at Cherokee, Clarinda, Independence, and Mount Pleasant. Two state prisons are maintained, at Anamosa and Fort Madison. Eldora has an industrial school for boys and Mitchelville has a similar institution for girls. The school for the deaf is at Council Bluffs, the home for feeble-minded children is at Glenwood, the college for the blind is at Vinton, and the inebriate hospital is at Knoxville. Marshalltown is the seat of the State Soldiers' Home.

INHABITANTS. Iowa takes sixteenth rank in the number of inhabitants. In 1900 it had 305,920 persons of foreign birth, two-thirds of whom were Germans and Scandinavians. In the same year the colored population was 13,186, of which number 382 were Indians and 12,693 were Negroes. All of the Protestant denominations are well represented, but the Roman Catholics are more numerous than any other body of Christians. The Protestant denominations which have the largest number of communicants include the Methodists, Lutherans, Presbyterians, Baptists, Christians, and Congregationalists. Des Moines, located in the central part of the State, is the capital and largest city. Other cities include Dubuque, Davenport, Sioux City, Council Bluffs, Cedar Rapids, Burlington, Clinton, Ottumwa, Keokuk, Muscatine, Fort Dodge, Marshalltown, Fort Madison, and Boone. In 1905 the State had a population of 2,210,050; in 1925, 2,419,927.

HISTORY. Iowa was named from an Indian word which means "the beautiful land." It was included in the region inhabited by the Iowa, Illinois, and Sac and Fox Indians. Marquette and Joliet visited the region in 1673, but no attempt to found a settlement was made until about a century later. Julien Dubuque, a French Canadian, in 1788 obtained a grant of land near the present city of Dubuque, where he operated lead mines and carried on trade with the Indians. The first permanent settlements were made in 1833 near Burlington. It was organized as a part of Michigan Territory in 1834, became a part of Wisconsin Territory in 1836, and was organized as the Territory of Iowa in 1838. Flourishing settlements had in the meantime grown up in the eastern part of the State and along the Des Moines River. Iowa City was made the capital in 1839 and a constitution was formed in 1844, but the State was not admitted into the Union until Dec. 28, 1846. Ten years later the capital was removed to Des Moines. The Sioux Indians perpetrated a massacre upon the whites at Spirit Lake in 1857, but this did not check the rapid immigration from states farther east and from Europe. Railroad building was promoted rapidly, and as early as 1885 there was not a locality within the State farther than fifteen miles from a railway. A constitutional amendment to prohibit the manufacture and sale of spirituous liquors was adopted in 1882, but it was declared unconstitutional by the courts. For more than fifty years the State has enjoyed an unbroken era of growth in population, industrial enterprise, and intellectual development.

IOWA, State University of, an institution of higher learning for both sexes, located at Iowa City, Iowa. It was founded in 1855 with an endowment by Congress of two townships of land, and it was reorganized in 1860. It comprises the colleges of medicine, law, journalism, dentistry, pharmacy, applied sciences, liberal arts, education, commerce, nursing, music, child welfare, and the graduate college. A summer school for library training and a summer session for teachers are maintained by the college of liberal arts. The system of accredited high schools in the State brings the university in close touch with various educational institutions, and it maintains university extension and lecture courses. It has a library of 400,000 volumes, one of the finest in the State. The university has buildings and grounds valued at $9,881,314, and has an annual income of about $4,850,000. The faculty of instructors numbers 550 members and the enrollment of students is about 8,300.

IOWA CITY, a city in Iowa, county seat of Johnson County, on the Iowa River, 54 miles west of Davenport. It is on the Chicago, Rock Island and Pacific Railroad and on several electric lines. The surrounding country is fertile and has large interests in dairying and farming. The noteworthy buildings include the county courthouse, the State University of Iowa, the Mercy Hospital, the high schools and many business blocks. Among the manufactures are radios, flour, gloves, brooms, toilet articles, ironware, and machinery. It has electric lighting, street railways, waterworks, pavements, and other improvements. Iowa City was founded in 1839, was the capital from 1839 until 1856, and was incorporated in 1853. Population, 1905, 8,497; in 1925, 15,289.

IOWA COLLEGE, (now Grinnell College), an institution of learning at Grinnell, Iowa, the oldest college in the State. It was founded at Davenport in 1847 by Congregationalists, but was removed to Grinnell in 1860. It includes three departments, the academy, the college, and the school of music. The buildings and grounds are valued at $900,000. It has a library of 85,000 volumes, an income of $90,000, and an endowment of $2,100,000. The faculty consists of 60 instructors. In 1925 it had an attendance of 910 students.

IOWA INDIANS, an Indian tribe of the Dakota family that formerly lived in the vicinity of the Mankato River, Minnesota. In 1700 the tribe numbered about 1,500, but at present there is a remnant of only about 125, who are colonized on reservations in Oklahoma and Kansas.

This tribe led several destructive wars against the Osage Indians. The Iowas have taken kindly to the industries.

IOWA RIVER, an important river of Iowa, rises near the Minnesota boundary, and after a course of 300 miles discharges into the Mississippi. It flows through a fertile agricultural country, is skirted by a belt of valuable timber, and contains many varieties of fish. Among the cities on its banks are Eldora, Marshalltown, and Iowa City.

IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS, an educational institution for both sexes, situated at Ames, Iowa. It was established by an act of the State Legislature in 1858, and four years later came into possession of certain lands granted by Congress to promote agricultural and mechanic education. In 1869 it was formally opened. The departments include those of engineering, agriculture, veterinary medicine, science, and domestic economy. In connection with it is the Iowa Experiment Station, which affords facilities for investigating agricultural problems. A campus of 125 acres has been set apart from the college domain, which embraces about 1,984 acres. A small tuition is charged all residents of the State, while others pay a very nominal fee. Students are admitted from accredited schools or upon examination. It has been proven by experiments that this institution has been of much value in developing the industrial and intellectual forces of Iowa and other states. The endowment is $694,953, the value of all college property is $8,300,000, and the annual income is about $3,040,750. It has an excellent supply of apparatus and a library of 133,064 volumes. About 6,350 students comprise the average enrollment.

IPECACUANHA (ĭp-ē̇-kăk-ū̇-ăn′ȧ), the name of a plant of South America, found chiefly in the damp and shady woods. It is a shrub, has a few leaves near the ends of the branches, and bears small white flowers. The fruit is a dark purple berry. It is valuable for the root, from which a medical substance known as *ipecacuanha* is obtained. This product has a bitter taste, is mildly irritant, and is commonly known as *ipecac.* As a medicine it is used as a stomachic tonic, as an expectorant, and in disorders of the skin.

IPHIGENIA (ĭf-ĭ-jē̇-nī′ȧ), in Grecian legends, the daughter of Agamemnon and Clytemnestra. It is related that Agamemnon offended Diana and as an atonement offered to sacrifice the most beautiful being born within the year. Since this happened to be Iphigenia, the payment of his vow was long delayed, and when he placed her on the altar she was caught up in a cloud by Diana and carried to Tauris. Later she became priestess to Artemis, and subsequently was removed to Attica by her brother Orestes, whose life she saved. The legend of Iphigenia forms the subject of many Grecian poems. She is the hero of one of Schiller's most beautiful plays.

IPSWICH (ĭps′wĭch), a town and river port of Suffolk County, England, on the Orwell River, about 68 miles northeast of London and twelve miles from the North Sea. The streets are tortuous and narrow. Within recent years it has made material development on account of its navigation and railroad commerce. It has several fine schools, hospitals, and churches. The manufactures include flour, soap, beverages, machinery, agricultural implements, and fabrics. Shipbuilding is an extensive enterprise. It has electric lights and street railways. Ipswich has remains which date from the Roman occupation of England, but no mention is made of it until 991. It received a charter from King John in 1199. Population, 1921, 73,939.

IPSWICH, a town of Massachusetts, in Essex County, on the Ipswich River, 26 miles northeast of Boston. It is on the Boston and Maine Railroad and has communication by electric railways. The noteworthy buildings include the public library, the town hall, and the Manning High School. It has manufactures of soap, hosiery, isinglass, and machinery. The municipality maintains systems of waterworks and sanitary sewerage. Ipswich was settled by John Winthrop in 1633, when it was known as Agawam, but the name was changed to Ipswich the following year. It was the home of Anne Bradstreet and other pioneers of colonial times. Population, 1905, 5,205; in 1925, 6,055.

IQUIQUE (ē̇-kē′kȧ), a city and seaport of Chile, capital of the province of Tarapacá, on the Pacific coast. It is connected by railways with other trade centers. In its vicinity are extensive mining interests, including those of silver, iron, borax, iodine, saltpeter, and nitrate of soda. It has a large trade in live stock, fruit, lumber, and minerals. The climate is quite hot, but healthful, and earthquakes are not infrequent. Prior to 1881 it belonged to Peru, but in that year it became a possession of Chile. Population, 1922, 43,502.

IRAN (ē-rän′), the name used by the natives of Persia to designate their country. It is of ancient origin and has been applied to a region much larger than is included in that country at the present time, usually to the portion of Asia lying between the Tigris and the Indus. In history it is frequently applied to the region bounded by the Caucasus, the Caspian Sea, and Russian Turkistan on the north; by the Tigris, the Persian Gulf, and the Arabian Sea on the west and south; and by the Indus on the east. Within it was embraced the territory now included in Afghanistan. See **Persia.**

IRANIANS (ī̇-rā′nĭ-ạnz), or **Persians,** a people belonging to the Aryan or Indo-European family. They are so named from Iran, the ancient name of Persia. The Medes, who are mentioned as early as 2400 B. C., are the first of these people of whom we have historic record. Both the Medes and the Persians were highly advanced in civilization at an early date. The Iranian language may be divided into three general groups, which include the Old Persian cuneiform inscriptions; the Zend or Old Bactrian, the language in which the sacred writings of the Parsees is committed; and the Middle Iranian or Pehlevi languages, in which the Zend-Avesta commentaries are preserved. The modern Persian is Iranic, but it contains many Arabic words. In this language many celebrated masterpieces of literature were produced. The modern Iranians inhabit regions west of the Indus River. Among them are the Kurds, the Ossetians, the Baluchis, the Afghans, the Tajkis, and the Persians.

IRAWADI (ĭr-ä-wä′dĭ). See **Irrawaddy.**

IRELAND (īr′lą̈nd), embracing the Irish Free State and Northern Ireland, an island located 60 miles west of England, from which it is separated by St. George's Channel and the Irish Sea. It is the smaller of the two principal islands included in the United Kingdom of Great Britain and Ireland. It is bounded on the south, west, and north by the Atlantic Ocean, and on the northeast by North Channel which separates it from Scotland. The greatest length, measured from Fair Head in the northeast to Mizen Head in the southwest, is 304 miles. Its breadth varies considerably, being about 110 miles through the central part, between the bays of Galway and Dublin, and 210 miles from Benwee Head in the northwest to Carnsore Point in the southeast. The area is 32,583 square miles, including a water surface of 52 square miles.

Description. The surface is diversified, including large tracts of undulating districts and elevated ranges with hills and mountains, the greatest height being about 3,500 feet. Mount Carrantual, a peak of the Macgillicuddy's Reeks, in the southwestern part, has an elevation of 3,414 feet. In the southeastern part are the mountains of Wicklow, rising about 2,750 feet above the sea. The coast varies from gradual elevations to precipitous heights, but the general surface may be described as basin-shaped, the interior being a vast plain with extensive tracts of bogs and lakes. A number of islands abound along the west shore, of which Clare and Achill are the most important. Many excellent harbors are furnished by numerous coast indentations, and the entire coast line, including the inlets, has a length of 3,000 miles. The principal inlets are the bays of Donegal, Galway, Dingle, Bantry, and Dundalk. Lough Foyle is an important inlet on the north coast.

An irregular line drawn from Lough Foyle in the north to Mizen Head in the southwest marks the dividing line from which the rivers radiate, but the divide is not distinguished by striking surface features. Many of the streams widen into long lakes or loughs, owing to the fact that rainfall is abundant and the slopes are gradual. The Shannon, in the west, about 250 miles long, is the largest river in the United Kingdom. About half of it above the estuary is made up of the three lakes Derg, Ree, and Allen. In the north is the Erne River, which drains a part of the central plain and flows into Donegal Bay. The Boyne, rising in the central plain, is not made up of lakes. In the south is Waterford Harbor, into which flow the Suir and Barrow rivers. Other streams having a southward course include the Lee, the Bandon, and the Blackwater. The inland lakes include Lough Derg, Lough Ree, Lough Mass, Lough Neagh, and Lough Erne.

The climate of Ireland is greatly modified by the westerly winds blowing from the Atlantic Ocean, where they are tempered by passing over its comparatively warm surface. From this circumstance the climate is milder and more equable than that of England, and the mean winter temperature is 25° higher than that of the same latitude as the Atlantic region of America. While it has the advantage of a moderate temperature and ample rainfall, the disadvantages of damp winds and heavy fogs are felt in nearly all parts of the island, but particularly along the west and south coasts. In the interior the atmosphere is somewhat drier, the rainfall being about 35 inches, while the wetter districts have a rainfall of 42 inches. Owing to favorable climatic conditions, Ireland is clothed with the verdure of numerous plants, many of which are native to the island and winter in the open air.

Mining. Though Ireland has valuable deposits of iron ore, this mineral is not worked extensively, owing to the absence of large deposits of coal. Most of this product is obtained in Antrim County. A limited supply of anthracite coal exists, but the coal measures consist chiefly of an inferior grade of bituminous coal. About 125,000 tons are produced annually. Copper mining, though formerly extensive, is not important at present. Sandstone, limestone, and granite suitable for building purposes are abundant. Other minerals found in various quantities include alum, slate, salt, and lead ore.

Agriculture. Though the arable surface is rich in having a productive soil, large districts are made up of moorland. The land titles are vested in large owners, who lease the estates to peasants, and much of the land is sublet in small tracts. This condition arose from the English occupation of the island, when much of the land was confiscated and granted to English citizens. In the latter part of the 19th century the government adopted a policy to enable the peasants to purchase land, under which money was advanced for that purpose, and the peasants were permitted to repay by remitting annual installments. This resulted in dividing many of the larger estates, though much of the land is still held under conditions that require the payment of excessive rents. However, the methods of farming are improving, and much of the land has been redeemed by drainage and enriched by fertilizers.

A large per cent. of the land is in meadows and pastures. This condition has been augmented through the live-stock industry and as a means of improving the soil. The area cultivated in clover and other grasses for hay comprises nearly one-half of the cultivated lands. The acreage of oats is about one-half that devoted to the production of hay. Other crops grown extensively include potatoes, turnips, barley, beet roots, and wheat. Flax is grown chiefly in the northern part. Vegetables and small fruits are abundant in all sections of the island. Cattle raising is the principal live-stock industry, and the interests in dairying and for meat production are about equal. Sheep are grown chiefly in the highlands, where the grasses and climatic conditions are peculiarly favorable. Poultry raising is carried on almost universally among the peasants. Other domestic animals include horses, mules, swine, and goats. Forests of commercial value are abundant on the larger estates.

MANUFACTURES. The manufacturing industries are not important, when compared to the resources. A large proportion of the live-stock marketing is shipped to Great Britain, and many commodities that could be manufactured profitably are imported. Linen, silk, and woolen textiles are the principal manufactures. Belfast has been noted as a center of the linen textile enterprise for several centuries. Ulster is a center of manufacture of woolen and worsted goods. Large shipyards are located at Belfast, where the *Celtic* and the *Oceanic* of the White Star Line were constructed, and shipbuilding is well established at Dublin and Londonderry. Other manufactures include machinery, clothing, embroidery, lace, leather, and spirituous liquors. Considerable material for the manufacturing industry is supplied by the fisheries, which yield large catches of cod, herring, pilchard, and salmon.

TRANSPORTATION. Railways are operated in all parts of Ireland, thus connecting the coast with the productive interior points. The total lines aggregate 3,500 miles. Many of the streams are navigable in their lower courses for small boats, but the Shannon supplies the most important river transportation, and ocean steamers ascend it as far as Limerick. A number of the rivers have been canalized and connected by systems of canals. The highways are in a well-improved condition, affording means for transportation by wagon from the railway and canal centers. England has most of the Irish trade, which consists in large parts of the exportation of raw products and the importation of manufactured articles. The chief exports are live stock, grain, fish, whisky, and dairy products, while the imports include wheat, corn, flax, tea, tobacco, and machinery. The trade with foreign countries is principally with the United States, Germany, Belgium, and Russia.

GOVERNMENT. Ireland has been an integral part of the United Kingdom since 1801. Chief executive authority is vested in the governor-general, who is appointed by the British Crown and is aided by an executive council of 12 ministers. Legislative power is vested in the dail eireann, or parliament, consisting of the chambers of deputies and the senate, both elected by the people. Ireland is represented in the British House of Lords by 28 peers and in the House of Commons by 103 commoners. The judicial system is modeled upon that of England and culminates in the supreme court. The Irish Free State is divided into four provinces and 32 counties, the provinces being Leinster, Munster, Ulster, and Connaught. Northern Ireland, consisting of the six counties of Down, Antrim Londonderry, Armagh, Tyrone and Fermanagh, has a separate government from the Irish Free State.

RELIGION AND EDUCATION. The prevailing religion is Roman Catholic, the clergy of which is supported by voluntary contributions. Nearly one-third of the people are Protestants, the sects being Anglicans, Presbyterians, Methodists, Independents, Baptists, and Quakers, in the order named. The Anglican, or Episcopal Church, was the established church until 1869 and has 620,500 adherents, while the Presbyterian Church has 454,500 communicants. Elementary schools are under the management of the commissioners of national education and are maintained in all the districts. Besides the common and high schools, several colleges, seminaries, and universities are supported. Of the higher institutions the most important are the University of Dublin, and Queen's colleges of Belfast and Cork.

INHABITANTS. The majority of the inhabitants belong to the Celtic race, and the earlier immigrants from England have completely amalgamated themselves with the native people. Settlements of English and Scotch are numerous in the northeastern part. This element is Protestant and furnishes a large part of the Orange population. The native inhabitants are decendants of the ancient Celts, by whom the island was inhabited during the Roman occupation of England, but they are now called *Irish.* Large numbers of the Irish people have come to Canada and the United States, where they comprise a large and influential element, and have taken a prominent part in the social and industrial development. They are noted for their wit and industry.

Dublin, on Dublin Bay, an inlet of the Irish Sea, is the largest city and seat of government. Other cities include Cork, Belfast, Limerick, Queenstown, Waterford, Rathmines, Galway, Kingstown, Newry, and Wexford. The population of Ireland has decreased materially the past fifty years. At present it is 140 per square mile, or less than one-fourth that of England. This decrease is due chiefly to emigration, especially from the rural districts. In 1841 the island had a population of 8,196,597. In 1901, fifty years later, it was only 4,458,775. Population, 1921, 4,381,951.

Language. The Irish language is a branch of the Celtic and belongs to the Gaelic, being allied to the Manx and Scotch Gaelic, and to the British dialects known as the Cornish, Welsh, and Armoric. About 65,000 people of Ireland speak only Irish, while 890,000 speak both the English and the Irish. A widespread movement is now in progress by which it is designed to preserve the language and extend its use, a plan projected both in Ireland and the United States. At the head of this movement is the Society for the Preservation of the Irish Language, which has maintained headquarters at Dublin since 1877. The literature of the Irish is extensive, including legendry, history, poetry, and many works of value in theology and romance, some of the earlier dating from the 5th century. Many of the most eminent men classed with the English scholars and authors are more properly Irish. These writers include Thomas Moore, Justin McCarthy, Geoffrey Keating, and Douglas Hyde (b. 1860). The Irish scholars have given to the English language some of the most beautiful poems, searching historical writings, and eloquent orations.

History. The early history of Ireland is wrapped in fable. It is thought that the Iberians, or a branch of the Mediterranean race, were the earliest inhabitants. Later the Celts settled in Ireland, coming there at different times, and still later came large numbers of Scots. The controlling influence seems to have been vested in various tribes until the Scoti, which was the most powerful, subdued the others. Subsequently they made incursions into Gaul and Britain, which was then a Roman colony. In the middle of the 5th century Christianity was introduced by Saint Patrick, a man of Scottish birth, who was taken a slave to Ireland while still young. Later he escaped to Rome and returned to Ireland with the avowed intention of introducing Christianity. His work was attended by much success and Ireland became a seat of learning, while its monasteries supplied many noted missionaries to operate in continental Europe. However, the various political elements continued to be hostile toward each other, which had a depressing influence upon the national feeling, and the prosperity was more or less affected by the incursions of the Danes and other invaders from the north.

In 1167, while Henry II. was King of England, the Norman invasion occurred. At that time the island was districted into counties, the lands were divided among Norman barons, and English courts were established at Dublin. Then likewise originated the feudal titles to lands, which are still a hindrance to the prosperity and success of the common people. A heroic defense was made against the invaders, and at the beginning of the 16th century the English were still unable to conquer the larger part of Ireland. An act of the Irish Parliament granted Henry VIII. the title of King of Ireland, instead of lord, as was the case in the reign of Henry VII. This sovereign confiscated the lands of the church and attempted to force the people away from the Catholic religion, a measure bitterly opposed by the Irish. Elizabeth instituted a Protestant clergy, but the movement occasioned numerous uprisings under the Earl of Tyrone.

At the time of the Civil War in England, in the reign of Charles I., the Irish rose in rebellion and attempted to become free from the English dominion, but they were subdued by Cromwell in 1649. Many atrocities were perpetrated on both sides during this contest for supremacy in Ireland, and after the Irish and Loyalists were defeated they were generally banished to Connaught, while the English and Scotch settlers occupied the other portions. The struggle for independence continued during the reigns of Charles II. and James II., but, when the Irish preferred James to William III., the latter invaded Ireland in 1690, and in the Battle of the Boyne defeated the forces of James. In 1691 the Irish were defeated at Galway and Limerick, but a treaty was concluded by which the Catholic Irish were given religious liberty. This treaty was violated by Parliament granting about one million acres of land to the Protestants, and severe penal laws were passed against the Catholics, by which it was aimed to exterminate that faith. The enactment of these laws excited bitter opposition.

When the war for American independence began, it gave the Irish an apparent opportunity to become free. Some of the penal laws were modified to appease the people, privileges to erect schools were extended, and some of the restrictions previously placed on the Catholics were withdrawn. However, a declaration of independence was made by the Irish Parliament in 1782 under the leadership of Grattan and Flood. The uprising was supported by both Protestants and Catholics in Ireland, who were alike anxious to secure more wholesome legislation for the common people, as well as to obtain complete liberty of conscience. When the French Revolution began, in 1789, the Society of United Irishmen was instrumental in making another desperate effort for independence, but the movement was crushed after much loss of life. The government at London now resolved to unite the Irish and English parliaments into one body. This was done by the Act of Union, which was adopted by the Irish Parliament in 1800. On Jan. 1, 1801, Ireland was united by proclamation with England in the same manner that Scotland had been assimilated, except that it was not permitted to have as large a measure of local government, and the English Parliament became the supreme legislative authority. This measure was universally unpopular in Ireland from the beginning, causing several rebellions, and continues to be the source of much contention.

In 1829 the Catholic emancipation act went into effect, a measure making Catholics eligible to most public offices and to membership in Parliament. Since then many strenuous efforts have been made to secure the independence of Ireland, particularly in 1848 and 1865. The movement of the latter year is known as that of the Fenians, being promoted by the Fenian Society, and it received financial support from many Irishmen who were citizens of the United States and other countries. Several attacks were made on the Canadian frontier in 1866, but the American government interceded to maintain neutrality. This was followed by the disestablishment of the Irish Episcopal church in 1869 and slight modification of the land tenure laws. Subsequently agitation for Home Rule became the leading question, a movement designed to give Ireland a local Parliament and local self-government under English sovereignty, similar to that of Canada and Australia. Among the distinguished leaders in favor of this movement may be named Parnell and Isaac Butt (1813-1879), while the cause was ably defended by such Englishmen as Gladstone and Bryce. The National Land League was organized in 1883, which succeeded the Land League. This organization had for its object the acquisition of title to land by Irish tenants and was generally supported by the people of Ireland irrespective of political affiliations. In 1903, after an extended discussion, Parliament finally passed the Land Purchase Bill, under which the tenants or subtenants may purchase tracts of land from the landlords and pay for it in annual installments.

The principal issue which long engaged the public men of Ireland is that of Home Rule. Augustine Birrell (b. 1850), chief secretary to the Lord Lieutenant of Ireland, introduced such a measure in the Parliament in 1907. Although rejected by the House of Lords, it became a law, having been passed three times by the House of Commons and signed by King George. The Unionists organized to resist the law by force and its operations were postponed. In 1916 the Sinn Fein party declared the Republic of Ireland; in 1921 the Irish Free State was established.

JOHN IRELAND.

IRELAND, John, Catholic prelate, born in Kilkenny, Ireland, Sept. 11, 1838. His parents settled at St. Paul, Minn. He was ordained priest at St. Paul in 1861, became a chaplain in the army, and after the war was rector of the cathedral at Saint Paul. In 1875 he was ordained bishop, and in 1888 became archbishop of Saint Paul. He is noted as an advocate of temperance, an able speaker, and a profound thinker. For some time he was a director in the National Colonization Association and aided in establishing the Catholic University at Washington, D. C. He published a number of works, including "The Church and Modern Society." He died Sept. 25, 1918.

IRENAEUS (ī-rē-nē'ŭs), **Saint,** a Christian writer of the latter part of the 2d century. It is thought that he was born in Asia Minor about 125 A. D. He was a disciple of Polycarp, the Bishop of Smyrna, and became a priest at Lyons, in Gaul. Later he was made a bishop as successor of Photinus, who suffered martyrdom in 177, and in that position was an active opponent of the Gnostics. He devoted much time to an effort to settle the difficulty between the Eastern and Western churches, and led in the discussion concerning the day that should be observed as Easter. It is thought that he suffered martyrdom in the persecution under Septimus Severus in 203. The only writing extant is "Against Heresies," which is a Latin translation of the original Greek.

IRENE (ī-rē'nē), Empress of Byzantine, born in Athens, Greece, about 752; died in the isle of Lesbos, Aug. 15, 803. By her beauty and talent she attracted the attention of Leo, afterward Emperor Leo IV., whom she married in 769. After the death of her husband, in 780, she became regent of her son, Constantine VI., who ascended the throne when only nine years of age. Her regency became noted because of many internal disturbances and political conflicts, and in 802 she was banished to the isle of Lesbos, where she died of grief the following year. Though wise and energetic as a ruler, she is charged with many acts of cruelty. Her zealous devotion to the Greek Church caused her to be placed among its saints.

IRETON (ĭr'tŭn), **Henry,** soldier, born at Attenborough, England, in 1611; died Nov. 15, 1651. He studied at Trinity College, Oxford, and soon after joined the Parliamentary army against Charles I. At the Battle of Naseby he was taken prisoner by Prince Rupert, but escaped the following day. He signed the death warrant of the king, having served as a member of the court which tried Charles I. In 1649 he accompanied Cromwell to Ireland, who left him there to conquer the island, having appointed him lord deputy. His death occurred before Limerick from an epidemic fever, and he was buried in Westminster Abbey. After the Restoration his remains were exhumed and burned.

IRIDIUM (ī-rĭd'ĭ-ŭm), a metal discovered in 1803, so named from the colors exhibited by its solutions. It occurs native with platinum, osmium, and rhodium, in alloys of various proportions of these metals. Iridium is insoluble in mineral acid, and may be readily alloyed with copper, lead, gold, and other metals. It is used in the manufacture of standard weights, the fine edges of balances, and many articles that are to be preserved for a long time from the influence of the atmosphere. It is found in the Ural Mountains and the Pacific coast of North America. See **Chemistry.**

IRIS (ī′rĭs), in Greek mythology, the daughter of Thaumas and Electra, who was the messenger of the gods and personified the rainbow. She became the wife of Zephyrus and the mother of Eros. Her mission was to communicate between gods and men, a task she executed with singular tact, intelligence, and swiftness. She is represented with the staff of a herald in her left hand and with wings attached to her shoulders, ready to perform her duties at the bidding of Hera.

IRIS, the name of a genus of beautiful plants, sometimes called *flag* and *fleur-de-lis,* and native to the temperate climates. It includes many species, some of which are noted for their medicinal properties and others on account of their beautiful flowers. Most species grow in wet and marshy places and bear a variety of flowers, of which the most common tint is blue. The best known species of North America include the *blue flag* and the *common iris,* the former growing in marshy places and the latter being distinguished on account of its grassy leaves. The common iris has ornamental flowers of a violet-blue color, but they are variegated with veins of white-green or yellow. Its stems are about three feet high. Among the naturalized species grown in gardens are the beautiful *Spanish, Chalcedonian, Persian,* and *snake's-head.* Many are cultivated as border plants.

COMMON IRIS.

IRIS, the colored portion of the eye that surrounds the black central pupil, which is an aperture in the iris. It consists of a muscular curtain of three layers, the anterior, posterior, and middle fibrous. The surface is variously pigmented, giving the eye its color. *Iritis* is an inflammation of the iris, due to a prolonged use of the eye, to injury or accident, or to rheumatism or some other constitutional disease.

IRISH LANGUAGE. See **Ireland.**

IRISH MOSS, or **Carrageen,** the name of several species of seaweed common to the coast of Ireland and other countries of Europe. They are not mosses, but are algae, and thrive on rocky and stony coasts. The common *carrageen* yields the greater part of the Irish moss of commerce. It is used as medicine and as an article of food. The plant is branched, grows to a length of from two to twelve inches, and is reddish brown in color. It is prepared in the form of jelly and blancmange by boiling in water or milk, then adding some sugar and spices. Iceland moss, although used in a similar way, is a different plant, being a lichen.

IRISH SEA, a body of water located between Ireland and Great Britain, connected with the Atlantic Ocean on the north by North Channel and on the south by Saint George's Channel. Its length is about 135 miles and the width varies from 60 to 120 miles. Several islands are located within it, including Anglesey and the Isle of Man.

IRITIS (ī-rī′tĭs). See **Iris.**

IRKUTSK (ĭr-kŏŏtsk′), a city of Siberia, capital of a government of the same name, and the residence of the governor general of Eastern Siberia. It is located near Lake Baikal, on the Trans-Siberian Railway, 3,385 miles from Moscow. It is well built, has broad and substantially paved streets, and maintains public waterworks and electric street railways. Among the noteworthy buildings are the museum, the public library, and several public schools. It has a number of fine hospitals, churches, and seminaries. The manufactures include linen goods, leather, machinery, furniture, and woolens. The trade in tea, furs, and cereals is very extensive. Irkutsk was founded in 1652, but its prosperity dates from the railroad development and the growth of Russian influence on the Chinese boundary. Population, 1922, 90,382.

IRON (ī′ŭrn), the most important of all metals. It is found in nearly all forms of clay, earth, and rock, though rarely in a pure state. When pure, it is silvery-white, very tenacious, malleable, and ductile. The commercial product is derived from ores, which are abundant and widely distributed, and are known as magnetite, hematite, siderite, and limonite. Ores classed as *magnetite,* when pure, contain 72 per cent. of iron and are so named because the iron in them occurs as magnetic oxide. *Hematite* may be red, blue, or specular. *Limonite* consists of hydrated oxides and includes the bog and other ores. *Siderite* contains carbon dioxide. Iron is found in varying proportions in both sea water and mineral water, and forms an essential constituent of plants and animals. The sun and stars contain iron, and it constitutes a large portion of meteorites that fall from space to the earth.

Pure iron burns before reaching the melting point. For this reason it must be combined with other substances to make it of the greatest utility, such as sulphur, copper, silicon, carbon, arsenic, phosphorus, and other metals with which it forms important alloys. Absolutely pure iron is seldom seen, except in laboratories, where it is used for experimental purposes. *Cast iron* is a commercial iron produced in a blast furnace and contains a large proportion of carbon, is neither ductile nor malleable, and may be easily cast in molds. *Pig iron* is the form in which cast iron is made at the furnace, being run into molds, called *pigs*. *Wrought iron* is usually fibrous, ductile, and malleable, is produced in a puddling furnace or a forge, and contains very little carbon or other impurities. *Weld iron, bar iron,* and *steel* are different compounds of iron. They contain less carbon than cast iron and more than wrought iron, and can be forged, tempered, cast, and materially hardened by heating to redness and cooling suddenly. The several varieties of iron manufactured differ in the degree of their properties as well as in the proportions of their constituents, and by different applications serve man in an unlimited field of useful purposes. Salts of iron are used largely in medicine as tonics.

The iron deposits of North America are very extensive. In the production of pig iron the United States exceeds every other country in the world. Nearly all states of the Union and most of the provinces of the Dominion have iron deposits, though there are some districts in which they are especially abundant. The most productive iron fields operated at present are those of the Lake Superior region, from which about two-thirds of the iron ore is obtained. Other vast deposits are in Pennsylvania, Ohio, Alabama, Tennessee, Virginia, and Missouri. Pennsylvania leads in the manufacture of iron products, but Minnesota ranks first in the output of iron. The highly productive deposits of that State are chiefly in the Vermilion and Mesabi ranges, where mines were first opened in 1884. This district extends northward into Ontario and eastward by the Gogebic and Menominee ranges of Wisconsin and Michigan. In 1688 the first blast furnace of Pennsylvania was operated under the direction of William Penn, and in 1817 the first rolling mill was established at Plumstock, Pa. The iron industry of the Southern States is making rapid progress, owing to the vast iron ore and coal deposits in that region, while marked attention is also directed toward the industry in the states of the West, especially Colorado

The world's production of pig iron, as reported in 1922, is 92,524,500 tons. Of this quantity 35,850,000 tons were produced in the United States, 11,850,500 tons in Germany, 11,340,250 tons in Great Britain, and 5,425,000 tons in France. In the same year Canada produced 562,450 tons. Other countries producing iron extensively are Austria, France, Russia, Belgium, Sweden, and Norway. The finest grade of iron produced in Europe is taken from the mines at Dannemora, Sweden, and is used extensively for horseshoe nails. These mines have been operated continuously since the 15th century and are inexhaustible. The manufacture of all forms of machinery and utensils and the construction of large buildings have increased remarkably the demand for iron and steel. There are few machines now produced that do not consist largely of these metals. The impetus of railroad building in Africa, Asia, South America, and Australia has greatly increased the foreign demand for the American product. However, the growing markets abroad are tending to develop on a large scale the output of native products in many sections of the Old World.

History. Iron is one of the metals earliest known in history, being mentioned in the Bible as early as Genesis iv., 22, where Tubal-Cain is spoken of as "instructor of every artificer of brass and iron." Egyptian sepulchers represent butchers sharpening their knives on a round bar of metal. It is reasonably certain the discovery of iron at Mount Ida dates from 1406 B. C. The vast deposits of iron ore in India were known from remote times, and the Romans utilized products of iron at an early period. Iron mines were operated in Britain as early as 54 B. C., and much earlier in continental Europe, especially in Germany, Spain, and Italy. When the Egyptian obelisk was removed from Alexandria to New York, in 1880, a piece of pure iron was discovered under its base, which was estimated to have been situated there over 1,900 years. Tools made of iron and steel by the ancients more than 3,000 years ago are preserved in the museums at Rome, Berlin, London, Paris, and other cities of Europe.

After the decline of Rome, Spain became noted for the production of iron and steel, the most extensive furnaces being located in the province of Catalonia, in the north of Spain, whence the *Catalan furnace* was named. The Catalan furnaces are still used for low blast, and serve a useful purpose where iron ore is reasonably pure. With the discovery that all ores cannot be melted in Catalan furnaces, it became necessary to construct higher furnaces, with an opening at the top into which the ore is thrown. This is the form of structure utilized in modern blast furnaces, and their invention dates from the early part of the 14th century, when a native of Germany introduced this form and utilized it extensively for the production of iron from ore secured in the Rhine provinces. These furnaces were introduced into France in the middle of the 15th century and into England about the same time.

Coal did not come into general use in blast furnaces until 1713, charcoal being used previously, but the latter was displaced because it does not furnish sufficient heat. The imperfectly worked iron ore left in Britain by the Romans supplied materials for some of the high grade furnaces for nearly 300 years, being rendered of value because of the increased heat obtained from coal and coke. In 1585 iron deposits were discovered in North Carolina by an expedition sailing under Sir Walter Raleigh. The iron first used in America was smelted in Europe, but the American products began to be used in manufacturing in Virginia as early as 1619. However, material progress was not made until 1643, when blast furnaces were built near Massachusetts Bay, at the present site of Lynn, where deposits of bog ore are found. Among the valuable improvements in the manufacture of iron may be mentioned those of Cort, who, in 1783, secured a patent on machinery used in rolling and the next year was granted a patent on devices employed in puddling. Dalton discovered the hot blast in 1827 and Bessemer, in 1856, discovered the method of converting crude iron into steel by the Bessemer process. See **Blast Furnace; Rolling Mill; Steel.**

IRON AGE, a term used to indicate the degree of civilization and culture of a people considered from the material of which their tools and weapons are made. The three prehistoric stages are known as the ages of stone, bronze, and iron. This succession in the use of tools and weapons was not followed universally in every part of the world. In some portions, as in America, Africa, and the islands of the South Pacific, the natives passed directly from the use of stone to iron. The age of iron began in Greece in the time of Homer, the Homeric poems alluding to the transition from bronze to iron. From the southern portion of Europe the age of iron moved northward. It reached Scandinavia about the period of the Christian era, and became fully established about the year 800 A. D., when the Scandinavians were converted to Christianity. In the stone age implements and weapons were cut from native rock, in the bronze age they were cast, and in the iron age they were hammered into shape and ornamented by curved lines. The iron age was characterized in most countries by the introduction of alphabetic characters, by which a basis was laid for history and literature. The present time is often spoken of as the *age of steel,* and sometimes as the *age of electricity.*

IRONCLAD VESSELS, the naval vessels that are protected from the fire of the heavy guns by iron or steel plates. Ironclad vessels are of comparatively modern invention, and were first tried on some of the French floating batteries at Kinburn in 1855. The experiments were not satisfactory until 1858, when the French vessel *La Gloire* was constructed, and the following year Great Britain began to introduce armor-clad vessels into the navy. Since then marked improvements have been made, and war vessels have taken on a powerful and secure form. The first test of a protected vessel in actual military contact occurred in the Civil War, when the Confederates covered the *Merrimac* with railroad rails and other heavy irons, naming it *Virginia,* and in this way succeeded in damaging the Union navy. This was followed by the invention of the *Monitor,* a protected turret ship, by Ericsson, and from it resulted an entire revolution in naval warfare.

The first ironclads were constructed of wood, with steel or iron plates protecting the entire exposed surface, but at present iron and steel enter extensively into the general construction, while the firing from them is done through portholes, or from central turrets or citadels. The plate formerly used was from three to five inches thick, the thinner being near the bow and stern, but those of more recent manufacture have armor from six to fifteen inches in thickness on the sides, and a deck plate from two to four inches thick. The most important manufactories of armor plate are located at Essen, Germany, known as the Krupp works. All the powerful nations, such as the United States, Great Britain, Germany, France, Russia, and Italy, have ironclad vessels for offensive and defensive operations. The navy of Great Britain has more ironclad vessels than that of any other country. Such battleships as the *Oregon* and the *Minnesota,* of the United States navy, are representative types of first-class armored vessels. Italy long had two of the largest ironclads in the world, the *Lepanto* and *Italia,* each having a displacement of 13,840 tons. However, they are exceeded in size by the *Minnesota,* the *Connecticut,* and the *Louisiana,* each of which has a displacement of 16,000 tons.

IRON CROSS, a military decoration given for distinguished service by the German government. It was first given by Frederick William III. of Prussia in recognition of distinguished services in war. It was revived during the war with France and in the World War. The decoration consists of a Maltese cross of iron bordered with silver, and is suspended from the neck by means of a cord. A similar decoration, known as the grand cross, is awarded to officers of high rank.

IRON CROWN, a crown used at the coronation of the kings of Lombardy and afterward by the German emperors, when the latter were sovereigns of that country. It is made of six pieces and is adorned with jewels, enamels, and golden roses. The cross was so named from an iron circle, which, according to tradition, was forged from a nail used in the crucifixion of Christ. Charlemagne, when he united Italy with Germany to form the Holy Roman Empire, wore this crown. Subsequently it was worn by Charles V., by Napoleon I., and by two emperors of Austria. In 1866 it was placed in the

Church of Saint John the Baptist at Monza, Italy.

IRON GATE, a narrow place in the Danube River, near Gladova, a short distance below the point where the river crosses the boundary of Hungary. It is formed by the Transylvanian Alps. Formerly it obstructed navigation. In 1890 vast excavations were begun to widen and deepen the river bed, which were completed in about ten years.

IRON MASK, The Man with the, a name by which an unknown personage of France is described, who was kept in various prisons for many years. Some assert that he was a relative of Louis XIV. It is related that he became angry and boxed the ears of the grand dauphin, on account of which he was imprisoned for life. He is spoken of by Voltaire as a prince of noble appearance, and it is related that an iron mask concealed his face when he was transferred from one prison cell to another. In the later years of his life he was confined in the Bastile, and there was shown distinctive favors. According to some writers he was the half-brother of the grand dauphin, son of Louis XIV.

IRON MOUNTAIN, a city in Michigan, county seat of Dickinson County, near the Menominee River, fifty miles west of Escanaba. It is on the Chicago and Northwestern and the Chicago, Milwaukee and Saint Paul railroads. In the vicinity are productive iron mines. The chief buildings include the county courthouse, the high school, and a number of churches. It has manufactures of mining, machinery, lumber products, and automobile accessories. Sewers, pavements, electric lighting, and waterworks are among the utilities. It was settled in 1873 and was incorporated in 1888. Population, 1904, 8,585; in 1920, 8,251.

IRON MOUNTAIN, or **Iron Mount,** a famous hill in Saint Francois County, Missouri, 81 miles south of Saint Louis. It has an area of 500 acres and rises to an altitude of 200 feet above the surrounding country. The deposits consist of specular or hematite iron ore and appear to be inexhaustible, constituting one of the richest and purest iron ores in the United States. Near it is Iron Mountain, a village having important railroad connections and containing blast furnaces and factories.

IRONTON (ī'ũrn-tŭn), a city in Ohio, county seat of Lawrence County, on the Ohio River, about thirty miles above Portsmouth. It is on the Norfolk and Western, the Chesapeake and Ohio, and other railroads. On the opposite side of the river is Russell, Kentucky; here the river is crossed by a cantilever bridge. The surrounding country has deposits of bituminous coal, iron ore, and brick and fire clays. Among the chief buildings are the high school, the Masonic Temple, the county courthouse, the Odd Fellows Hall, and the Briggs Public Library. It has stove works, machine shops, brickyards, foundries, cement works, and rolling mills. Gas and electric lighting, street railways, pavements, and waterworks are among the public utilities. Ironton was settled in 1832 and incorporated in 1849. Population, 1900, 11,868; in 1920, 14,007.

IRONWOOD, the name of several species of hornbeam, a tree native to North America. This tree is rather small, rarely exceeding six inches in diameter, and the wood is hard and tough. A similar forest tree is native to South America. The ironwood of commerce is obtained from a myrtle of the eastern part of Asia. This wood is extremely hard, dark colored, and so heavy and dense that it sinks in water. The natives of China and the East Indies use it for anchoring. From its hardness and density, ebony is sometimes called ironwood.

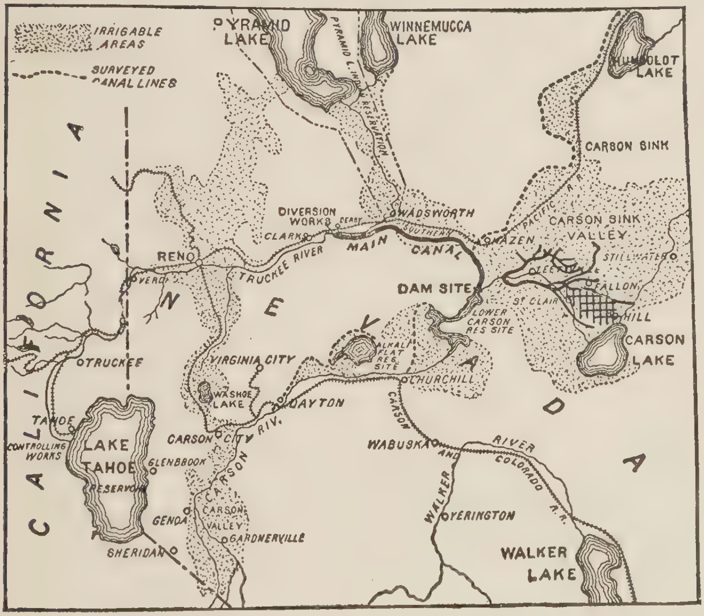
IRONWOOD, a city of Michigan, in Gogebic County, on Montreal River, 150 miles west of Marquette. It is on the Soo Line and the Chicago and Northwestern railroads. The iron industry is the most important enterprise, its mines yielding large quantities of rich ore. Among the chief buildings are the city hall, the Carnegie Library, the high school, and a number of churches. It has manufactures of cigars, ironware, machinery, furniture, and utensils. The surrounding country is included in the rich Gogebic iron range of Michigan and Wisconsin. It has systems of public drainage, lighting, and waterworks. The place was settled in 1884 and incorporated three years later. Population, 1904, 10,019; in 1920, 15,739.

IROQUOIAN INDIAN (ĭr-ô-kwoi'ăn), one of the largest groups of American Indians, comprising the most important linguistic stock. Originally they appear to have occupied the region in the lower part of the Saint Lawrence, whence they spread up the river and to the section bordering on the Great Lakes. They comprise the Iroquois, the Eries, the Hurons, the Tuscaroras, and many others. Cartier first came in contact with them in 1535, when they were well established in the region now included in Quebec, Ontario, New York, and Pennsylvania. These Indians are closely related in language to the Cherokees, but the latter appear to have separated from the parent stock at a very early date. See **Iroquois.**

IROQUOIS (ĭr-ô-kwoi'), or **Six Nations,** a celebrated confederation of North American Indian tribes. They were first known as the Five Nations, which included the Mohawks, Onondagas, Senecas, Oneidas, and Cayugas. In 1712 they were joined by the Florida Tuscaroras, when the union became known as the Six Nations. They carried on extensive hostilities against the French in the 17th century, when they numbered about 15,000, but suffered severe losses. Subsequently they became allied to the Dutch, later to the English, and afterward joined Pontiac. A peace concluded was broken in 1774, but another treaty was made in 1784 with the United States, and the greater portion moved across the lakes into Ontario. In the War of 1812 the American and Canadian branches were pitted against each other, but at the close of that war a lasting peace was concluded. At present the Iroquois number about 12,000, many of whom have embraced Christianity and become advanced in educational arts. The larger part of those in the United States are in New York, Wisconsin, and Oklahoma. Their most distinguished men include Brant, Cornplanter, and Red Jacket.

IRRAWADDY, or **Irawadi,** a river of Southern Asia, rises in the Himalaya Mountains, has an almost southerly course of 1,500 miles, and flows by an extensive delta into the Bay of Bengal. The river valley is exceedingly fertile. As a highway of commerce it is more important than either the Indus or the Ganges. During the Burmese wars it furnished the chief means for British advancement, and now carries the bulk of the trade through central Burmah. Levees are maintained for a distance of 100 miles from the sea to protect the lowlands from overflows. Among the tributaries are the Rangoon, the Bhamo, and the Bassein. The cities on its banks include Mandalay, Rangoon, Ava, and Prome.

IRRIGATION (ĭr-rĭ-gā′shŭn), a system by which the fertility of soils is produced or increased by supplying an adequate amount of water for the production of crops. The term is likewise applied to a system of periodical inundation, whereby the fertility is increased, or by which the tillage of rice is made possible. Irrigation is necessary in most instances where the rainfall is less than twenty inches per year, but this depends somewhat upon the character of the soil, the kinds of crops grown, the amount of evaporation, and whether the precipitation is chiefly in the growing season. The value of irrigated land ranges from $10 to $1,000 per acre, depending upon the locality and the classes of plants that are cultivated.



TRUCKEE-CARSON IRRIGATION SYSTEM.

The cultivation of lands under a method of irrigation is one of the oldest of industries and was utilized extensively in prehistoric ages in regions where natural rainfall was insufficient. It was practiced extensively in Egypt more than 2,000 years before the Christian era, when great artificial lakes and canals were built for the purpose of conducting the water across the barren and otherwise unproductive surface to the tracts containing elements of fertility. The same system was in common use among the peoples of Persia, India, China, Mesopotamia, and other Eastern countries which have an arid climate. In New Mexico and Arizona, as well as other portions of the United States, are traces of systems of irrigation that were built by prehistoric peoples. However, in many localities the physical conditions have changed materially. In some instances the supply of water has become exhausted and the rivers have dried up entirely, or have become lowered in their channels to such an extent that the irrigated regions are left far above and remote from the former source of water. In the Salt River valley of Wyoming are remains of former irrigation systems that have been followed more or less by modern canals, and the leveling performed centuries ago by forgotten races is still a source of utility. Old as the industry is, there have been few changes from the methods employed in remote times.

In the western portion of North America, both in Canada and the United States, are large tracts of land where rainfall is not sufficient for the production of crops, and formerly served only for pasture lands. Many localities of this region have been improved by irrigation and other tracts may be, but there are vast districts that do not have a sufficient supply of water and can never be redeemed. In many portions of Arizona, Idaho, Colorado, California, Oregon, Utah, Washington, Montana, New Mexico, Nevada, Wyoming, and Alberta much value has been added to lands by irrigation. In some regions the water supply is drawn from rivers, while in others vast reservoirs are maintained to catch the water coming from melting snows, and this is distributed by means of canals at the proper season. In the western portion of North and South Dakota, Nebraska, Kansas, Oklahoma, and portions of Texas and Saskatchewan, the rainfall is sufficient at certain periods, and irrigation is provided when there is less than the usual amount of rainfall. In some states, particularly in South Dakota and California, irrigation is effected to a considerable extent from artesian wells. In portions of South Carolina, Georgia, Texas, Louisiana, and other states irrigation takes on the form of inundation, which is an essential in the cultivation of rice.

The United States has an arid region estimated at 175,000,000 acres, of which about 14,000,000 have been reclaimed by irrigation. California reports the largest area of reclaimed land, about 2,100,000 acres, while Colorado has 1,500,000 acres, Montana 700,000 acres, Idaho 500,000 acres, and Utah 400,000 acres under partial cultivation. The largest irrigated area is in India, where 25,000,000 acres have been reclaimed. Egypt has 6,500,000 acres of reclaimed land, and this region will be greatly increased as the benefits of the Assouan dam are utilized more fully under projected extensions of the canal district. Italy has the largest irrigated area of Europe, about 3,000,100 acres, while Spain has 500,000 acres, and France has 410,000 acres.

Congress passed the Reclamation Act on June 17, 1902, which is greatly facilitating progress in reclaiming arid regions. Under this law 50,000 acres of land in Nevada were supplied with water in 1905 by the great Truckee-Carson system. It is so named from the Truckee and Carson rivers, which rise on the eastern slopes of the forest-clad Sierra Nevada Mountains in California, and flow in a general northeasterly direction into Nevada. The drainage basin of the former contains a number of beautiful lakes, including Lake Tahoe, all of which are to be utilized for flood storage. In Nevada these rivers flow for some distance parallel to each other, and at one point not more than twenty miles apart. The Truckee River then flows northward from Wadsworth, passing into Pyramid and Winnemucca lakes, and the Carson River, dividing into three channels, ultimately disappears into Carson Sink. The illustration shows the Diversion Works on the Truckee River, where its water is turned into a large canal 31 miles in length and carried into the Dam Site on the Carson River, where the combined flow is directed into two large canals, one on each side of the river, which are the feeders for a distributing system of ditches hundreds of miles in length. It is estimated that 350,000 acres were reclaimed in this section at an expenditure of $9,000,000. Similar projects have been carried out or are under way in Colorado and other states.

IRTISH (ĭr′tĭsh), or **Irtysh,** a river of Asia, the most important tributary of the Obi. It rises in the Altai Mountains, in China, and after a northwesterly course of 1,625 miles joins the Obi near Samarova. The valleys of the upper Irtish and its tributaries are among the best cultivated and well populated districts of Siberia, and through the region passes the Trans-Siberian Railroad. Tara, Omsk, and Tobolsk are among the ports on the Irtish.

IRVING (ẽr′vĭng), **Sir Henry,** formerly John Henry Brodribb, celebrated actor, born in Keinton, England, Feb. 6, 1838; died Oct. 13, 1905. He studied in London, became a clerk, and in 1856 made his first appearance on the stage at the Sutherland Theater, London. Subsequently he played three years at Edinburgh, then returned to London, and later remained for five years at Manchester. His mark of distinction was made in 1870, when he took the part of *Mathias* in "The Bells," from which his career as a noted actor begins. Irving became distinguished on account of his excellent voice and gesture, and from the fact that he elevated the drama by presenting artistic performances. In 1874 he produced Hamlet for 200 nights consecutively, and about 1885 added Macbeth, Othello, Richard III., and other Shakespearean plays. About that time he became associated with Ellen Terry and presented with much effect Tennyson's "Queen Mary" and later Goethe's "Faust." He visited America for the first time in 1883 and subsequently made several visits, in all of which he was received with marked enthusiasm. Besides writing a number of addresses, he published several papers in the *Nineteenth Century* and wrote an introduction to Pollock's translation of Diderot's "Paradox of Acting." Queen Victoria knighted him in 1894. Irving married Florence O'Callahan in 1869. His two sons, Henry Brodribb Irving and Laurence Irving, became well known as actors.

HENRY IRVING.

IRVING, Washington, eminent author, born in New York City, April 3, 1783; died at Sunnyside, Nov. 28, 1859. When sixteen years of age he began to study law in an office, preferring this to regular college work on account of delicate health. His father, William Irving, possessed a choice library, to which young Irving became warmly attached, and found particular delight in studying the works of Chaucer and Spenser. His first essays appeared over the signature of *Jonathan Oldstyle* and were published in a paper called the *Chronicle,* edited by his brother Peter. He sailed for the south of

France in 1804 for the purpose of recuperating his health, and while on his sojourn of two years in Europe visited Italy, Belgium, Holland, and other countries, during which time he met Allston, Mrs. Siddons, and Kemble. Irving returned to America in 1806 and was admitted to the bar, but, as the practice was not according to his taste, engaged in writing and contributed to various periodicals. About this time he joined his brother William and James K. Paulding in publishing *Salmagundi, or the Whim-Whams and Opinions of Launcelot Langstaff, Esq.,* which somewhat resembled the style of Addison's *Spectator.* In 1809 he published "Diedrich Knickerbocker's History of New York," a production read extensively on account of its genial humor. Subsequently he formed a partnership with his two brothers in a business venture but while in England, in 1815, the enterprise failed, and he decided to devote himself wholly to literature, for which purpose he settled in London. While there he began work on the "Sketch Book," sending installments to be published by Van Winkle at New York, but later he sold the entire work for $2,000 to Murray, a London publisher, who bought it on the recommendation of Walter Scott. Among the "Sketches" are "Westminster Abbey," "Rip Van Winkle," and "The Legend of Sleepy Hollow," all of which still remain popular. While Alexander H. Everett was American minister to Spain, he invited Irving to study Spanish history, from which resulted his "Alhambra," "The Conquest of Granada," "History of Columbus," and "Life of Mahomet." He became secretary of the American legation in England in 1829, and in 1832 returned to New York City, where he was received with a public banquet by the citizens. In 1842 he was appointed minister to Spain by President Tyler, at the instance of Daniel Webster, and returned to America in 1846.

WASHINGTON IRVING.

Soon after returning to his native country he established his residence near Tarrytown, on the Hudson, a region of which he wrote extensively. His home was called "Sunnyside." There he spent the closing years of his life with his nieces, but remained busy as a writer until the time of his death. Irving ranks among the most noted authors of America, taking a high place because of his graceful language and wide sympathies. Among the writings not mentioned above are "The Crayon Miscellany," "A Tour of the Prairies," "Tales of a Traveler," "Adventures of Captain Bonneville," "Life of Oliver Goldsmith," and "Life of Washington." His "Life and Letters" was published after his death.

IRVINGTON, a town of New Jersey, in Essex County, adjoining the city of Newark. It is noted as a residential center and has well-platted and improved thoroughfares. It has a public library and several fine schools and churches. The manufactures include clothing, wall paper, brushes, and machinery. Electric lights, street railways, and a system of sewerage are among the public utilities. The first settlement on its site was made in 1666. It was incorporated in 1898. Population, 1920, 25,466.

ISAAC (ī'zak), meaning "He will laugh," a patriarch of the Hebrews, son of Abraham and Sarah, half-brother of Ishmael, and father of Jacob and Esau. He was so named because of the joy that his birth occasioned. From Genesis we learn that he was born when Abraham was 100 and Sarah was 90 years of age, that he escaped miraculously when offered as a sacrifice, that his wife, Rebecca, occasioned his blessing to be given to Jacob instead of Esau, and that he died blind at Hebron when he was 180 years old. His place of burial was in the cave of Machpelah, where also Abraham, Jacob, Sarah, and Rebecca were buried. In Jewish history he occupies a less prominent place than either Abraham or Jacob.

ISABELLA I. (ĭz-ȧ-bĕl'lȧ), known as Isabella of Castile, Queen of Spain, daughter of King John II. of Castile and Leon, born April 23, 1451; died Nov. 26, 1504. She was married to Ferdinand V., King of Aragon, in 1469, and on the death of her brother, Henry IV., became Queen of Castile and Leon in 1481. Though proud and ambitious, she possessed many personal charms, remarkable beauty, and a winning grace. It was her habit to attend council meetings, and she demanded that her name appear on public documents with that of Ferdinand. In the management of public affairs she was prominently connected with the introduction of the Inquisition, in 1480, and the discovery of America by Columbus in 1492. To aid in the expedition contemplated by Columbus she pledged her jewels to secure the money, and to her is given the honor of making possible the enterprise that led to the discovery of the new world. She was instrumental in expelling the Moors after the conquest of Granada. At her death she required Ferdinand to confirm by an oath a promise never to marry again. She is mentioned frequently in history as Isabella the Catholic.

ISABELLA II., Maria Isabella Louisa, ex-Queen of Spain, born in Madrid, Oct. 10, 1830; died April 9, 1904. Her mother, Maria Christina, induced her father, Ferdinand VII., to establish female succession, and at his death on Sept. 29, 1833, Isabella became Queen of Spain under the regency of her mother. Her uncle, Don Carlos, claimed the throne, on account of which a civil war resulted, and after seven years the Cortes exiled Don Carlos and his principal supporters and recognized the claims of Isabella. She became queen in fact on Oct. 15, 1843, and three years later married her cousin, Don Francisco d'Assisi. Among the events of her reign are the negotiations with the United States for the purchase of Cuba, political differences with Chili and Peru, war with Morocco, and the annexation to Spain of Hayti and Saint Domingo. A revolution broke out against her government in 1868, which was followed by the formation of a republican government, and Isabella fled to France. On June 25, 1870, she renounced her claim to the throne in favor of her son, Alfonso, who became king in 1874. Isabella returned to Spain in 1882.

ISAIAH (ī-zā'yȧ), meaning "salvation of God," son of Amoz, the most noted of the Hebrew prophets. His prophecies began in the reign of Uzziah and continued through those of Jotham, Ahaz, and Hezekiah, about 740 B. C. The history of his life is not known, but it is certain that he exercised a wide influence among the people of Judah and over the kings. It is thought he died when nearly one hundred years old, shortly after Manasseh became king. His early writings threatened judgments upon the sinful, and the latter portions predict a glorious future for Israel.

ISCHIA (ēs'kē-ä), an island in the Mediterranean, situated about six miles west of Italy, near the Bay of Naples. The area is eighteen square miles. It is of volcanic origin, contains many thermal springs, and is noted for its healthful climate and production of excellent wine and fruits. Monte Epomeo, the highest point, is 2,617 feet above the sea. Among the chief industries are fruit culture, fisheries, and the entertainment of many tourists who visit it annually. Ischia is the capital and most important city, having a population of 7,008, and other towns are Forio and Casamicciola. Earthquakes are not infrequent, the most important of recent date occurring in 1883, when about 5,000 persons were killed. In the city of Ischia is a picturesque castle built by Alfonso I. of Aragon, in the 12th century. Population, 1922, 27,034.

ISHMAEL (ĭsh'ma-el), meaning "God will hear," son of Abraham and Hagar. His mother was an Egyptian who served as handmaid to Sarah. When the youth was fifteen years of age, he and his mother were expelled from the house of Abraham. Subsequently they dwelt in the southern part of Palestine, where Ishmael married an Egyptian woman and reared a family of twelve sons and one daughter. Since it is foretold in the Scriptures that Ishmael would become a great nation, it is thought that the Arabs descended from him. Mohammed claimed him as his progenitor, and in the 10th century the name of Ishmaelites was assumed by a secret society of Mohammedans in Syria. The story of Ishmael is given in Genesis xvi. and xxi.

ISHPEMING (ĭsh'pē-mĭng), a city of Michigan, in Marquette County, fifteen miles west of Marquette. It is on the Duluth, South Shore and Atlantic and the Chicago and Northwestern railroads. The city is noted because large quantities of red hematite iron ore are mined in the surrounding country. Among the manufactures are ironware, clothing, tools, cigars, machinery, steam boilers, and utensils. The public school system carries a fine course of study. Among the municipal facilities are electric lights, pavements, a public library, and an extensive system of street railways. It was settled about 1857 and was incorporated in 1873. Population, 1904, 11,623; in 1920, 10,500.

ISINGLASS (ī'zĭn-glȧs), the popular name of mica, a mineral of a metallic luster found in large deposits, remarkable for its tendency to split easily into thin, transparent, elastic plates. It is used as a substitute for glass in windows in Mexico, Siberia, and some countries in South America, and for lanterns, having the property of bearing sudden and marked changes in temperature without breaking. In the manufacture of stoves it is used for ornamental portions. It constitutes a valuable substitute for glass on war vessels, since it is not easily broken by the jar from the discharge of guns.

ISINGLASS, a gelatinous substance made from the air bladder of various kinds of fish. The best quality is secured from the bladder of the sturgeon, but the American product is made from the cod, hake, and other fishes. The purposes for which it is used include the manufacture of glue, court-plaster, a cement for glass and porcelain, and for refining sherries and white wine. It likewise serves for stiffening silks, linens, gauzes, and other textiles.

ISIS (ī'sĭs), the sister and wife of Osiris, considered the principal goddess of the Egyptians. She was worshiped as the personification of the moon, as Osiris was of the sun. The Egyptians regarded her the earliest teacher of agriculture and offered her the first ears of the field in practically the same way that the Grecians honored Ceres. In statuary she is represented with the horns of a cow, but has the form of a graceful woman, and sometimes holds in her hand the sistrum, an instrument used by the Egyptians in the worship of the gods. Her deification was first instituted at Memphis, later she became popular throughout Egypt, and ultimately her worship was introduced by Sulla, in 86 B. C., among the Romans. In Egyptian mythology she is regarded the principal figure. To her is attributed the annual overflow of the Nile, the disappearance of the waters from the Phaedrus River, and a queenly reign among the gods.

ISLAM (ĭz'lȧm), a word used by the Mohammedans to signify full submission to God, hence to designate their religion. It is applied to the whole body of believers who accept the formula of faith: "There is no God but Allah, and Mohammed is his prophet." In this profession of faith is included the acknowledgment of the divine unity and of the submission of Mohammed, the observance of prayer, alms giving, keeping the fast of Ramadan, and the pilgrimage to Mecca. To this the Shiites, who are dominant in Persia, add: "Ali is the vicar of God." However, the orthodox Mohammedans, who comprise the majority of the Church of Islam, reject the position thus assigned to Ali.

ISLAND (ī'land), a small body of land surrounded by water. The islands differ from the continent in that they are smaller in size, and range from very small islets to large tracts of land, such as Cuba and Great Britain. They were formed by corals, by volcanic action, or by being separated from the mainland through the action of waves and currents. To the last mentioned class belongs Great Britain, which was probably separated by the action of currents from the continent of Europe. *Oceanic* or *pelagic islands* are located in the ocean, while *continental islands* lie near the continents and resemble them in geological structure. Oceanic islands are either coral or volcanic, with few exceptions. An *archipelago* consists of a group of islands, such as the Hebrides and the West Indies. The action of waves causes many changes on the coasts of islands, as in the case of Helgoland, which has been greatly reduced in the historic period.

ISLAND NUMBER TEN, an island formerly in the Mississippi River, near the boundary between Kentucky and Tennessee, about forty miles below Columbus, Ky. It was so named from its position below Cairo, Ill., being the tenth of a series of islands. The Confederates under General Pope had fortified it, and after the fall of forts Henry and Donelson it was commanded by General Mackall with a part of Beauregard's army. Commodore Foote, commanding seven Federal gunboats, bombarded it three weeks. At the same time an army under Pope operated against it, and the Confederates were compelled to surrender on April 7, 1862. About 7,000 prisoners and an immense quantity of ammunition and supplies were captured by the Federals. The river gradually washed the island away, the last portion of it disappearing in 1866.

ISLANDS OF THE BLESSED, in Greek mythology, the name of certain islands of the western ocean, regarded the abode of departed spirits and of certain favored mortals who were rescued from death by the gods. The locality is referred to by Homer as the Elysian Plain. The inhabitants were thought to enjoy an abundance of everything and live eternally in ease and comfort.

ISLAY (ī'lȧ), one of the Hebrides Islands, included in Argyllshire, Scotland. It is a short distance southwest of the island of Jura, from which it is separated by the Sound of Islay. The area is 220 square miles. It is the richest and most productive of the Inner Hebrides, hence is often called "Queen of the Hebrides." Population, 1922, 6,982.

ISLE OF PINES. See **Pines, Isle of.**

ISLE ROYALE, an island in the northwestern part of Lake Superior, located a short distance south of Port Arthur, Canada, and forming a part of Houghton County, Michigan. The surface is rocky, but it is rich in copper mines and fisheries. Low spruce and fir trees cover a considerable part of the island. It is about ten miles broad and forty miles long, and near it are a number of small islets. Siskawit Bay, on the southeastern shore, is the principal inlet.

ISLES OF SHOALS, a group of eight small islands off the coast of New Hampshire, about ten miles southeast of Portsmouth. They are inhabited by fishermen and are noted as a favorite resort for bathing, fishing, and general recreation. On Star and Appledore islands, containing 150 and 400 acres respectively, are a number of hotels for summer visitors, and on White Island is a revolving light 87 feet above the sea. Steamers run regularly from Portsmouth to the principal landings on the islands. Champlain discovered these islands in 1605 and they were visited by Captain Smith in 1614. The permanent inhabitants consist mostly of fishermen.

ISMAIL PASHA (ĭs-mä-ēl' pȧ-shä'), Khedive of Egypt, born in Cairo, Egypt, in 1830; died March 2, 1895. He was the second son of Ibrahim Pasha, grandson of Mehemet Ali, and secured a liberal education in Paris. He returned to Egypt after the death of his father, and in 1856 engaged with Said Pasha, viceroy of Egypt, to fill various missions at European courts. In 1862, when Said Pasha visited Europe, he was intrusted with the administration, and in 1863 became viceroy, on account of the death of Said Pasha. The Civil War in America made it possible for him to acquire vast wealth by the production of cotton in the valley of the Nile, and by means of it he became freed from Turkish supervision and assumed the title of Khedive. The construction of the Suez Canal had his vigorous support, largely because he considered it of value to Egyptian commerce, and in 1866 he formally opened the first Egyptian parliament. Later he undertook internal improvements, such as the building of railroads and telegraphs and the construction of lighthouses, highways, bridges and telephones. He was successful in suppressing the slave trade. These progressive movements occasioned an increase in taxation and in consequence an opposition by the people, on account of which he abdicated in 1878 in favor of his son, Tewfik Pasha, who became Tewfik I. Ismail foresaw the opposition against him, accumulated a large fortune abroad, and in 1879 left Egypt. In 1886 he visited Constantinople, where he was detained in captivity for a period of years.

ISOBARS, or **Isobarometric Lines,** the lines which join places that have an equal atmospheric pressure. They are employed in making weather maps and charts. Formerly they were used to show only the pressure at sea level, but now such maps indicate the variations of gravity at different places. Charts constructed in this way usually indicate the places that have the same monthly and annual atmospheric pressure, hence are of importance in forecasting the weather. The so called *gradient of pressure* is the rate of change of pressure in a unit of horizontal distance. It is greatly influenced by the movement of air, especially strong winds, the latter tending to lessen the difference of atmospheric pressure. The gradient of pressure is greatest around a storm center and is least in the strongest currents of wind.

ISOCRATES (ī-sŏk′rȧ-tēz), famous orator of Greece, born in Athens in 436 B. C.; died in 338. His father, Theodorus, provided for him the most liberal education that the schools of Athens afforded. His voice was weak and his inclinations were timid, but he attained to much renown as a writer of orations and a teacher of rhetoric, by which means he obtained positions of wealth and influence. Though not personally connected with political strifes, he was a sincere patriot and labored earnestly for the honor and independence of his country. In 392 B. C. he founded a school at Athens, where he continued to teach and write and to influence the thought and oratory of the most brilliant men of Greece. The Battle of Cheronaea terminated unhappily for his country, on account of which he became broken-hearted, and after abstaining from food several days died from grief. He was a friend of Plato, and wrote orations that compare favorably with those of Demosthenes, 21 of which are extant.

ISOTHERMAL LINES (ī-sô-thẽr′mạl), the lines on a globe or map passing through places in which the mean temperature is the same. The first observations and collection of facts bearing on isothermal lines were made by Humboldt. *Isocheimenal* lines are drawn over places in which the winter temperature is the same, and *isotheral* lines are used to designate places having the same mean summer temperature.

ISPAHAN (ĭs-pȧ-hän′), an ancient city of Persia, capital of the province of Irak-Ajemi, on the Zendarud River, about 210 miles south of Teheran. For centuries it was the capital of Persia and is still an important commercial center of the interior. It is situated in a fertile valley. A wall about 23 miles long incloses the city. The noteworthy buildings include the palace, a royal mosque, and many bazaars. It is ornamented with a large number of parks and public gardens of shrubs and flowers. The trade, though large, is carried on principally by caravans. It has manufactures of cotton, woolen, satin, and velvet goods, glass, firearms, earthenware, brassware, sword blades, pottery, and trinkets. The surrounding country produces large quantities of tobacco, opium, and cereals. Ispahan attained to much power during the reign of the caliphs of Bagdad. It was captured by Timour in 1387. In the 17th century it contained a population of about 900,000. The capital was removed to Teheran in 1722, after Ispahan had been ravaged by the Afghans. It is now the seat of the high priest and the religious center of Persia, containing many institutions of educational importance. Population, 88,581.

ISRAELITES (ĭz′rȧ-ĕl-īts). See **Jews.**

ISRAËLS (ēs′rȧ-āls), **Josef,** painter, born in Groningen, Holland, in 1824; died Aug. 12, 1911. He was of Jewish parents, who sent him to Amsterdam to study art. Subsequently he studied at Paris, Brussels, and Rotterdam, and in 1848 settled in Amsterdam to engage in painting historical pictures. He removed to The Hague in 1870, which city he made his permanent home. He was granted the Belgium Order of Leopold and made a member of the French Legion of Honor. Several of his productions were exhibited at the Paris Exposition of 1900 with the result that he received a number of medals. His best known works include "The Shipwrecked Mariner," "Alone in the World," "Through Darkness to Light," "Toilers of the Sea," "Between the Field and Seashore," "Bric-à-brac Dealers," and "The Cradle."

ISTHMIAN GAMES (ĭs′mĭ-ạn), one of the four great national festivals of Greece, celebrated on the Isthmus of Corinth, the other games being the Nemean, Olympian, and Pythian. They were celebrated in April or May of every alternate year, and consisted of boxing, wrestling, foot and chariot racing, gymnastics, throwing the discus, and contests in music and poetry. These games were of very ancient origin and were established in honor of Neptune (Poseidon). With the spread of Christianity they began to decline, but they were still celebrated in the time of Constantine and Julian. Those who took a prize were originally awarded with a garland of pine leaves, and later cash awards were given to the victors.

ISTHMUS (ĭs′mŭs), a narrow passage of land connecting two larger bodies, or uniting a peninsula with the mainland. The ancient Greeks applied the name Isthmus without any addition to designate the Isthmus of Corinth, which connects the Morea with northern Greece. The Isthmus of Suez, connecting Africa and Asia, and the Isthmus of Panama, connecting North and South America, are the most prominent isthmuses.

ISTRIA (ĭs′trĭ-ȧ), a peninsula in the northeastern part of the Adriatic Sea, forming the territory of Istria, a part of Italy. With it are included the islands of Cherso and Veglia, the whole possession including an area of 1,910 square miles. The surface is diversified, being mountainous in the north and quite level in the south. Monte Maggiore, the highest peak, is 4,600 feet above the sea. Valuable forests abound. The minerals include salt, alum, and lignite coal, and the cultivated lands yield fruit and cereals. Large quantities of wine, olive oil, and lumber products are manufactured. Parenzo is the capital. It became a possession of Austria in 1797 and was transferred to Italy in 1918. Population, 1922, 345,506.

ITAGAKI (ē-tȧ-gä'kē), **Taisüke**, statesman, born in the province of Tosa, Japan, in 1838. He received the education of a military gentleman and served as a general in the imperial army during the Civil War of 1868, taking an active part in subjugating the province of Aidzu, in northern Japan. In 1871-73 he was one of the privy councilors to the emperor, but resigned in the latter year because he advocated war with Corea on the ground that his government should receive a tribute from that country, this policy causing him to lose popularity. Subsequently he advocated a reorganization of the government on constitutional lines, for which purpose he organized the first political party in Japan, known as liberals, who favored a constitution that would make the minister responsible to the parliament instead of to the throne. He was minister of public works in 1878 and became minister of the interior in 1880. Under his leadership the liberals united with the progressives in 1898, forming a constitutional party, which had a majority in the lower house for a brief time. During the Russo-Japanese War he gave hearty support to the government. In faith he held to the Christian Church. He died July 23, 1919.

ITALY (ĭt'ȧ-lĭ), a kingdom of Europe, comprising chiefly the middle peninsula of the three that project from the southern coast of the continent into the Mediterranean Sea. Besides this, it includes the islands of Sardinia, Sicily, Elba, and about 65 others of more or less importance. Its length from Sicily to the Alps is about 690 miles, and in width it varies from 90 to 350 miles. The boundary line is formed on the north by the Alps, which trend from east to west in irregular ranges, and the Mediterranean and Adriatic seas form the principal portion of the remainder of the boundary. It is separated from the Balkan Peninsula by the Strait of Otranto, 47 miles wide. On the east it is bounded partly by Austria, on the north by Austria and Switzerland, and on the west by France. The western shore is washed by the Ligurian and the Tyrrhenian seas and the southern by the Ionian Sea, all being portions of the Mediterranean. Sicily, which extends almost across the Mediterranean, is separated from the mainland by the Strait of Messina. The mainland has an area of 97,000 square miles and the islands equal 19,684, making a total of 116,684.

Description. The Apennine Mountains traverse centrally the entire peninsula and attain to heights of from 10,000 to nearly 14,000 feet above sea level. In the vicinity of Naples the Apennines are little less than 10,000 feet, and in the northern portion the greatest height is 13,650 feet. Many of the summits are volcanic, though Vesuvius, on the Bay of Naples, is the only active volcano in the continent of Europe. Mount Aetna, in Sicily, is the highest volcanic elevation of Europe. Others of historic interest include Mount Stromboli in the Lipari Isles. In the northern part of Italy is the valley of the Po, popularly called the Plain of Lombardy, which embraces an area of 37,000 square miles. Much of the Italian mountain scenery is picturesque, the vegetation is abundant, and the valleys are remarkable for beauty and fertility.

Though the drainage is carried by numerous streams, the only rivers of large size are the Po and the Adige, both of which flow into the Adriatic Sea. The former is navigable to Turin, and with its tributaries affords navigation a distance of 600 miles. It is fed by the snows of the Alps and the rains of the Apennines, and enters the sea by a large delta. Among the rivers of the peninsula are the Arno, the Brenta, and the Tiber, but these and others of their class flow swiftly and are subject to great changes between the dry season in summer and the seasons of heavy rains. Many beautiful lakes are located in the central and northern parts, among them Como and Bolsena, while Garda and Maggiore extend partly beyond the northern border. A system of canals is maintained in the basin of the Po and several of the rivers have been canalized, both for transportation and for irrigation of rice lands.

The climate varies greatly on account of the extent in latitude and vast differences in elevation. In the northern part the climate is continental, similar to that of Central Europe but in the southern part it resembles that of Africa, being affected by the dry atmosphere and the sirocco winds that blow across the Mediterranean. The mean annual temperature on the peninsula is about 57°, while in the extreme south and on the islands it varies from 60° to 64°. The largest rainfall occurs in autumn and winter, hence irrigation must be utilized during the growing season in many parts of the kingdom. The valley of the Po is particularly fertile and is one of the best agricultural regions in the world. Extensive swamps are located in different sections, such as the Pontine marshes, the Maremma in Tuscany, the Campagna of Rome, and the swampy lands of the lower Po. These marshy regions are subject to pestilence and fevers, but all other parts are singularly healthful. The clearness and beauty of the Italian sky is famous.

MINING. The mineral wealth of Italy is not extensive. Coal, though found in limited quantities, is not produced to the extent that the output supplies the demand, hence the manufacturing enterprises are necessarily abridged. Lignite coal is obtained in Tuscany and in Sardinia, and small quantities of anthracite are mined in Piedmont. Sulphur is the most important mineral, constituting about one-half of the mineral output. The most productive sulphur mines are worked in Sicily, and small quantities are obtained in the mainland. The Italian sulphur mines are the most important in the world. A good grade of iron ore is found in the island of Elba. The zinc mines are confined chiefly to Sardinia and Lombardy. Copper is obtained in Tuscany and Piedmont, rock salt in Calabria and Sicily, and quicksilver in Tuscany. The marble quarries of Carrara are famous, but marble is obtained in other localities, especially in Massa and Serarezza. Other minerals include small quantities of gold, silver, and antimony. The mineral waters in various localities of the Apennines and the volcanic regions are especially suited for bathing and medicinal purposes.

AGRICULTURE. About 72 per cent. of the land is productive; hence agriculture maintains its position as the leading industry. The land is held under three classes: peasant proprietorship, a system of rent, and a form of coöperative partnership. An extensive arid region and large stretches of swamp land have interfered with farming to a considerable extent, but the government is promoting a system of irrigation and drainage, through which several millions of acres will be added to the agricultural area. Wheat is the most important product and it is grown in all parts of the kingdom, but the crop is not sufficient to supply the demand. Corn is likewise grown in all parts of the country, but most largely in the provinces of Milan and Caserta, though some importation of this cereal is necessary to supply home consumption. The production of rice holds third rank, and the quantity grown is sufficient to supply the demand and to furnish considerable for exportation. Other important crops include oats, rye, barley, potatoes, hay, turnips, and vegetables. Small quantities of flax, cotton, and hemp are produced.

The breeding of live stock has not been developed to the extent of that industry in England and Germany, neither in the quantity and in the rearing of improved grades. Horses, cattle, swine, and sheep are exported, and cattle and goats are grown largely for meat and dairying to supply the home demand. The sheep industry is confined largely to the elevated and poorer regions of the peninsula, while the most extensive interests in cattle are in the northern part. Poultry and eggs are exported in large quantities. In Italy, having a favorable climate, much of the land area is devoted to the cultivation of fruits and silk cocoons. Fine groves of lemons and oranges are met with in the southern part, especially in Sicily and Sardinia. Italy produces a larger quantity of olives than any country in the world, and has large interests in such fruits as figs, dates, apples, quinces, and melons. The mulberry tree is grown in connection with silk culture, and is cultivated most extensively in the central and northern sections. Tobacco is cultivated profitably. A large forest area is maintained, much of which belongs to the government, and practically all of the timber land is under government supervision. The trees include the olive, myrtle, mulberry, lemon, chestnut, and numerous others.

MANUFACTURES. The absence of extensive fuel resources has made it impossible for Italy to develop rapidly as a manufacturing country, much of its coal supply being imported. Raw silk is the most important manufactured product, and is produced extensively in Lombardy, Piedmont, and Venetia. Cotton and wool are spun and woven to a considerable extent, but the output is not sufficient to supply the demand. Macaroni is produced in large quantities, both for home consumption and for exportation. Considerable progress has been made the last two decades in the iron and steel industry, but the enterprise is greatly abridged by the absence of a sufficient supply of fuel. Butter and cheese of a fine grade are produced. Other manufactures include pottery, glassware, alabaster, chemicals, leather, and straw-plaited goods. The government has a monopoly of the manufacture of tobacco and salt, and government supervision is exercised over the manufacture of powder, sugar, chicory, alcohol, and beer. Having a favorable soil and a genial climate, large quantities of grapes are grown, and the manufacture of wine is correspondingly important.

TRANSPORTATION. The railways include a total of 11,200 miles. This is a smaller mileage than is now operated in any of the leading countries of Europe, but it is compensated for to some extent by the large transportation facilities along the coast of the Mediterranean, from which Italy secures great trade advantages with the cities of Southern Europe and on the Atlantic. Most of the railroads were built by the government or with government support, but they are now operated by private companies with the condition that they will revert to the state after they have been operated sixty years, or either party may terminate the contract at the expiration of each period of twenty years. A fine system of highways is maintained, partly by the nation and partly by the provinces and communes. These means of transportation, connected with the facilities afforded by rivers, canals, and steam and electric railways, afford communication with all the principal cities and districts of the country. The postal and telegraph systems are conducted by the government, and lines of telephones under public and private ownership afford excellent facilities. Submarine cables extend from the principal ports to the leading commercial centers in the world.

The trade of Italy is not as extensive as that of the principal European countries. At present the exports are somewhat exceeded by the imports. The largest foreign trade is with Germany, Austria, Switzerland, France, Great Britain, and the United States. Silk, wine, sulphur, raw flax, eggs, fruit, and olive oil are the chief exports. Among the leading imports are coal, wheat, raw cotton, machinery, fish, and raw wool. A large and active merchant marine is maintained.

EDUCATION. The system of schools is maintained and regulated by the government, either entirely or in conjunction with the communes or provinces. Attendance is compulsory in most parts of the kingdom, but the law is not efficiently enforced and the per cent. of illiteracy is considerably larger than in the countries of Northern Europe. Within recent years education has made rapid progress among the people, but in the southern part of the kingdom illiteracy is practically general. However, the higher institutions are efficient. The country has 21 universities, some of which have been celebrated many centuries for efficient work, especially those at Pisa, Padua, Genoa, Naples, Rome, and Palermo. The kindergarten system is modeled after that of Germany and the common schools are known as *lower grade* and *higher grade* elementary schools. Religious instruction is given to those whose parents request it. In addition are maintained night schools, Sunday schools, normal schools, gymnasia, colleges, and an extensive system of private educational institutions. Roman Catholic is the dominant religion, the Pope residing at Rome. Protestants and Jews constitute only a small portion of the people, but the exercise of religion is free to all.

GOVERNMENT. Premier Mussolini, who took charge of the government in 1921, assumed great powers under the Fascisti and made many changes in the government. Executive authority is vested in the king, who holds his office by heredity. At present the royal family is that of Savoy. The king has power to negotiate treaties and declare war, and is commander of the army and navy. Though clothed with large prerogatives, the sovereign is dependent upon a minister to have his official acts made valid, which minister assumes personal responsibility when countersigning imperial orders. The departments of government include those of the treasury, interior, foreign affairs, war, marine, finance, justice and religion, public works, commerce, industry and agriculture, public instruction, and posts and telegraphs. Legislative power is vested in the parliament, which consists of a senate and a chamber of deputies. The former is composed of princes of the royal blood and members of the latter are elected by citizens over 21 years of age who can read and write. The senate contains 320 members and the chamber of deputies is comprised of 508 members. Military service is obligatory from 21 to 39 years of age, the period of active service ranging from two to five years. At present the army consists of 250,000 men and officers, which is increased on a war footing to 3,200,000. It is divided into the three divisions known as the territorial militia, the mobile militia, and the permanent army. Its navy, though not equal to the most powerful, is in a state of healthful growth and includes a number of modern vessels.

Italy has not been particularly successful in its scheme of colonial expansion, its policy of keeping abreast with the great powers being at least a partial failure. At present the colonies are limited to Africa, where it has Italian Somaliland and Eritera. The former has an area of 100,000 square miles and the latter, 95,000 square miles. These possessions are populated mostly by nomadic peoples and have a population of about 730,000. The metric system is used in all weights and measurements and the monetary system is the same as that of France, except that the method of issuing paper money is somewhat different.

INHABITANTS. The inhabitants of Italy are of small stature and quite dark in complexion. Only a small number of foreigners reside in the country. The foreign inhabitants include principally French, Albanians, Greeks, Slavs, Germans, and Spaniards. A heavy emigration has been going on the last quarter of a century, due chiefly to the unsatisfactory condition of public affairs. Those who leave the country seek homes principally in the United States, Brazil, Argentina, and other countries of North and South America, and a considerable number find new homes in France, Germany, Austria, and Switzerland. In 1916 the total emigrants numbered 787,977, of whom 10,032 came to Canada and 358,569 to the United States.

Rome, on the Tiber, is the capital and largest city. Other cities of importance include Naples, Milan, Turin, Palermo, Genoa, Florence, Bologna, Messina, Venice, and Ravenna. The population has increased about fourteen per cent. in the last twenty years, and the density at present is 285 people to the square mile. In density of population it ranks third among the countries of Europe, being exceeded only by Belgium and the Netherlands. Population, 1922, 38,640,710.

LANGUAGE AND LITERATURE. The language of Italy is the Italian, which descended from the Latin. From the same source sprang the Spanish and French, but they are allied with other local elements, which make them more distinct from the Latin than the language of Italy. The

German emperor, Frederick II., who ruled in Italy from 1212 to 1250, established the University of Naples and made the Italian his court language in Sicily. This circumstance may be taken as the first step to place the Italian language among those to survive the general upheaval after the Middle Ages, and soon after writers and teachers began to multiply, especially in Tuscany. By the end of the 13th century Italian, owing to its accuracy and poetic beauty, began to take precedence as the language of literature. It was greatly extended in popularity by the writings of Dante (1265-1321), who gave it the form in which it has prevailed in an almost unchanged condition until the present. The "Divine Comedy" is Dante's masterpiece, and still continues a work of much popularity. Petrarch and Boccaccio, in the 14th century, wrote works in prose that greatly improved the language in grammatical accuracy. The best known work of Petrarch is his "Parallel Lives," while to Boccaccio we are indebted for his "Decameron," a work in prose from which Chaucer, Schiller, and other subsequent writers drew much inspiration.

Florence became the great center of classic learning after the Middle Ages, but other noted centers of education aided in extending a taste for literary work. Alberti (1406-1472), an eminent poet and prose writer, is best known by his "On the Family." The great political reformer, Savonarola, added valuable orations to the literature. Ariosto (1474-1533), an eminent poet, is the author of "Orlando Furioso," an epic of chivalry which is still popular. Among the historians of this period is Machiavelli (1469-1527), who is the writer of "Prince," a work translated into many languages. Benevenuto Cellini (1500-1571) gave tone and tendency to literature by fine, artistic work, while Torquato Tasso wrote many dramas and poems, the latter including "Jerusalem Delivered," and to the same period belong the painters Titian and Raphael. Galileo, in the 17th century, produced numerous scientific writings which for clearness and purity of prose, linked with his discoveries in astronomy, gave immortality to his name. At the end of the 18th century we note the tragic writings of Alfieri, including "Agamemnon," "Philip II.," "Antigone," and "Marie Stuart." Vincenzo Monti (1754-1828) made an excellent translation of the "Iliad" and "Odyssey," while Carlo Goldoni (1707-1793) ranks as a famous comedian, and Silvio Pellico (1788-1854) produced numerous patriotic and historical writings. Among the writers of the 19th century are Gabriele Rossetti (1783-1854), a poet of considerable renown, and the novelists Manzoni and Rosini. The historians of this period include Capponi and Balbo, the political writers, Joseph Mazzini, and the satirists, Giusto.

Italian literature, though quite extensive in scope and character, has hardly touched the people with as marked an impression as that of France, Germany, and England, largely because education has not been so widely disseminated within the regions where the Italian language prevails. However, with the larger encouragement of schools and higher institutions of learning there came a notable increase in interest, and the 20th century opened with prospects that before its close additions of wide scope will be made and general interest will become greatly extended. Among the recent writers of Italy may be named the historians Giovanni Monticolo and Vittorio Fiorini; the poets, Arturo Graf, Giosuè Carducci, and Gabriele d'Annunzio; the novelists, Matilde Serao; the dramatist, Roberto Bracco; and the general writers, Eugenio Rossi and Nicola Zingarelli.

History. The history of Rome (q. v.) includes the early history of Italy. Prior to Roman supremacy Italy was peopled by various Italian tribes, including the Etruscans, Oscans, Latins, Umbrians, and Sabines. Of these the Latins attained to the greatest power and gave their language and name to the people. At present there are few traces of the first inhabitants. In the northern part the Germanic element is mingled with the native peoples, especially in Lombardy, while in the southern section are many descendants of former Greek colonists. At present the people of Italy partake of the characteristics of the early Romans, Gauls, and Germanic peoples.

The history of Italy proper begins with 476, when Rome fell under the invading Heruli, who comprised the barbarian tribes that proclaimed Odoacer King of Italy. Theodoric the Great, King of the Ostrogoths, obtained possession in 493, and by wise administration gave Italy a more wholesome government than had been experienced since the first decline of Roman prosperity. However, the Eastern emperor, Justinian, vanquished the Ostrogoths in 552, and Italy was governed from Constantinople, where the Eastern Empire had held sway since 395. The Germanic Lombards secured dominion in 568, and in 800 Charlemagne became the recognized ruler of Italy.

The Carlovingian dynasty gave eight kings to Italy, and in 951 Otto, King of Germany, reduced Berengarius II. to vassalage and ten years later was crowned King of Italy and Emperor of Rome. For more than two centuries German kings governed Italy. However, numerous wars for supremacy took place periodically between the popes, emperors, and the independent cities, and at that time rose the famous contest between the Guelphs and Ghibellines. Frederick Barbarossa, the emperor, stipulated a six years' peace at Venice in 1177, and concluded a treaty with the Lombard towns in 1183. The municipalities of Genoa, Venice, Milan, and Pisa flourished during this period, and Venice became the supreme power in the Levant, after the capture of Constantinople. The popes became temporal sovereigns of Rome in 1278, and an effort made by Henry VII. to restore German supremacy was defeated in 1312 by the Guelphs. Three years prior to this, in 1309, the papal seat was established at Avignon, and from there the papal power was exercised for seventy years. The history of Italy as an integral political body ceases in the 14th century, when five powers controlled the country and continued to hold supremacy until about the end of the 15th century. These five powers include the former republics of Venice and Florence, the duchy of Milan, the kingdom of Naples, and the Papacy.

In Florence arose the Medici family, which by its wealth and sagacity had almost absolute sway, but the Battle of Pavia, in 1525, gave the German emperors appointive power over several of the states. With the rising power of Florence was exemplified the influence of Savonarola, under whose activities political opinion was influenced largely. Within the 16th century the rival armies of different claimants struggled for supremacy, particularly those of Charles V. of Germany and Francis I. of France, by which the papal influence gained in strength. Francis I. was expelled from Italy shortly after the Battle of Pavia, after which Rome was captured and Pope Clement VII. became the prisoner of Charles V., in 1527. Two years later Charles V. attained supremacy by the Peace of Cambrai, and his son Philip was recognized undisputed sovereign by the Treaty of Cateau-Cambresis, giving the Hapsburgs undisputed control. The establishment of the order of the Jesuits and the Inquisition strengthened the Papacy, and in 1684 Venice conquered the Peloponnesus. However, the Peace of Utrecht, in 1713, gave Austria supremacy in Milan, Naples, and Sardinia. After prolonged wars the condition of Italy was one of apathy, its spirit of nationalism remaining crushed until the rise of the French Revolution, when it began to take on new life.

In 1796 Napoleon invaded Italy, was successful against the Austrians in the Battle of Marengo, in 1800, and five years later was crowned king. Soon after several districts were annexed to France and the following year, in 1806, Joseph Bonaparte became King of Naples, who, two years later, was succeeded by Murat. Napoleon held undisturbed sway in Italy until 1814, when Murat and Austria coöperated against Napoleon, but Murat was dethroned and by court-martial was sentenced to death. In 1815 the Congress of Vienna restored Italy to its former state. At the same time the house of Savoy received Sardinia, the Hapsburg-Este family secured several principalities, and the wife of Napoleon, Maria Louise, received Parma. Lucca was given to the Duke of Parma, the Austro-Lorraine dynasty received Tuscany, the Pope was restored in the papal states, the Bourbons received Naples, and Monaco and San Marino secured independence.

These conditions existed more or less undisturbed until the Revolution of 1848, which broke out in Milan and Sicily, and the Italian people again became involved in a war for national union against foreigners. The movement received the support of the Pope in the beginning, but later it was withdrawn, whereby the national cause was weakened materially. In 1849 the Pope fled from Rome, a republic was proclaimed, and Mazzini became president. A French army of occupation restored the Pope in 1850 and other sovereigns were restored also, making the revolution fruitless. Victor Emmanuel II., King of Piedmont, gave aid to the national cause and was supported by Cavour of Sardinia and by Garibaldi. The Austrian army was defeated on June 14, 1859, at the Battle of Magenta and on June 24 at Solferino, after which the Peace of Villafranca was concluded. Victor Emmanuel was declared King of Italy in February, 1861, by the Italian parliament in session at Turin.

In the War of 1866 between Prussia and Austria, Italy was allied with the former, and, after the victory at Sadowa, Venetia was annexed by treaty to Italy and about the same time the capital was removed from Turin to Florence. In 1867 the national party under Garibaldi made an attack upon Rome, but was opposed by the papal army. However, on Sept. 20, 1870, Victor Emmanuel entered Rome, this being made possible by Napoleon III. withdrawing his troops to participate in the Franco-German War, and the emancipation of Italy was assured. The Pope was given a yearly donation of $622,500. He retained possession of the Lateran Palace, the Vatican, the Church of Saint Maria Maggiore, and the villa of Castel Gandolfo. Reunited Italy entered with enthusiasm upon an era of nationalism, developed internal improvements, and regained its place as one of the great powers of Europe. In 1872 destructive eruptions of Vesuvius occurred, when much property and many lives were destroyed. Victor Emmanuel died in 1878. He was succeeded by his son, Humbert I., who ruled with success until 1900, when he was assassinated, being succeeded by his son, Victor Emmanuel III. Italy became a member of the Triple Alliance with Germany and Austria in 1883. At the close of the war with Turkey, in 1911, Italy annexed Tripoli. In 1915 it repudiated the Triple Alliance and entered the war on the side of the Entente Allies, by which it had been promised territory from Austria-Hungary in a secret treaty. At the close of the war it received South Tyrol, Triest, a portion of the damages paid by Germany, and concessions in Istria and Asia Minor. See **War**, page 666, in the last volume of these books.

ITCH, a contagious disease of the skin. It is caused by the itch mite, a miscroscopic insect that burrows within the epidermis. The eggs are laid in the skin by the female, hatch in about ten days, and give rise to the disease. An application of lard and sulphur to the affected parts is a common remedy.

ITHACA (ĭth'ȧ-kȧ), a city in New York, county seat of Tompkins County, at the southern end of Cayuga Lake, 36 miles south of Auburn. It is on the Lehigh Valley, the Delaware, Lackawanna and Western, and other railroads. The surrounding country is agricultural and dairying. The noteworthy buildings include the county courthouse, the Ithaca Conservatory of Music, the high school, and many fine churches. Cornell University occupies a fine site near the lake. It has electric lights, a public library, waterworks, pavements, and street railways. Among the manufactures are cement, paper, farming machinery, flour, clocks, musical instruments, typewriters, leather, glass, and firearms. The vicinity was settled in 1789. Ithaca was incorporated as a village in 1821 and became a city in 1888. Population, 1925, 18,948.

ITHACA, now called *Ithaki,* an island of the Ionian group, situated west of Greece. It is sixteen miles long and four wide. The area is 38 square miles. It has a mountainous surface, some of the elevations rising to a height of 2,600 feet. The inhabitants engage largely in agriculture, fruit growing, and marine life. Ithaca is mentioned by Homer in the "Odyssey" and contains many interesting relics. Vathi is the present capital, has a population of 6,010, and engages in commercial enterprises. The island has a population of 11,508.

ITO (ē'tō), **Hirobumi, Marquis,** statesman, born in Choshiu, Japan, in 1840; assassinated Oct. 26, 1909. He was well educated and when quite young was associated with others in negotiating a treaty with Great Britain, Holland, France, and the United States. In 1865 he made a secret journey to Europe, where he studied western civilization and became convinced of the overwhelming superiority of the European nations. He visited the United States in 1871 to study the coinage system, and his report regarding the same led to the establishment of a mint at Osaka and the adoption of the decimal system of money. He accompanied Tomomi Iwäkura (1835-1883) around the world in 1872, visiting en route the principal nations to induce a modification of treaties, and was soon after appointed minister of public works, in which office he induced the building of a railway line from Tokio to Yokohama. In 1878 he made a visit to Europe to study the institutions of Germany, for which he was called the Japanese Bismarck, and in 1886 he became minister president of state, the leading place in the Japanese cabinet. While holding this position he instituted many economic reforms, organized the army according to the plans of Germany, and advocated a reorganization of the system of education. The new constitution was adopted after a series of debates lasting over four months, in 1889, and he was elected prime minister in 1892. He was succeeded by Yamagata in 1896, traveled in Europe, and was again prime minister when the allied forces rescued the legation in Peking. Subsequently he was made one of four *Elder Statesmen,* who are advisers of the Mikado, and as such was a leading figure in the Russo-Japanese War. Yale University granted him a degree in 1901. He published "Commentaries on the Constitution of the Empire of Japan."

HIROBUMI ITO.

ITURBIDE (ē-to͞or-bē'thȧ), **Don Agustin,** Emperor of Mexico, born in Valladolid, now Morelia, Mexico, Sept. 27, 1783; executed in Padilla, July 19, 1824. He commanded in a revolutionary outbreak in Mexico, joined the royalist party, and became chief commander of the army in 1815. On May 18, 1822, he was recognized by the army as Emperor Agustin I., but within ten months was compelled to abdicate in the presence of a congress that he had dissolved by force. This congress refused to accept officially his abdication for the reason that such action would recognize the validity of his election, but allowed him to retire to Italy with an annual pension of $25,000. In 1824 he published a statement of his claims at London, and in May set sail for Mexico with a view of making a second attempt to become the sovereign. On July 14 he landed in disguise at Soto la Marina, where he was recognized and arrested, and on July 19 was shot under orders of the state of Tamaulipas.

IVAN (ē-vän'), the name John in Russian, by which several Russian czars are known. Ivan I. was the Grand Duke of Moscow from 1328 to 1340. He is celebrated in history because of consolidating the power of Moscow, around which the empire formed. Upon his success is based the prosperity and power of Russia.

IVAN III., Grand Duke of Moscow from 1462 to 1505. His reign of 43 years was an important period in that it facilitated internal development, and by his influence absolute and independent power became vested in the autocracy. He married Sophia, niece of Constantine Palaeologus, in 1472, and by this act opened a way for European civilization into Russia. He claimed a right to Constantinople, since he descended from the Byzantine emperors, and adopted as his standard the two-headed eagle. Because of his skill in diplomacy, ingenuity as a lawmaker and daring in war he became known as The Great.

IVAN IV., surnamed The Terrible, first Czar of Russia. He reigned from 1533 to 1584. His incumbency is divided into three periods: his rule under the regency of his stepmother, Helen Glinska; the period from majority till the death of his wife, Anastasia Romanova; and the conclusion of his reign following her death. He assumed the title of Czar, a Slavonic form of Caesar, annexed Siberia, and defended European Russia against Poland. The second period of his reign was particularly prosperous, being marked by many internal improvements and strides of progress in the industries, sciences, and arts. In the latter period he showed much cruelty against those implicated in a plot by which a portion of his territory was to be annexed to Poland, and during that time large numbers were executed. This gave rise to his surname, The Terrible.

IVORY (ī'vō-rȳ), the hard substance that constitutes the greater part of the tusks of certain animals, as the elephant, narwhal, hippopotamus, mammoth, and walrus. The value of ivory is in its elasticity, hardness, whiteness of color, fine grain, and capability of taking a high polish. Elephant ivory obtained in equatorial Africa is considered the most valuable on account of its exquisite fineness, close arrangement, and frequent curvature of the tubules. The tusks of elephants commonly weigh about 60 pounds each, but some reach 180 and even 200 pounds. Ivory is useful in making ornaments, handles for knives and forks, billiard balls, pianoforte keys, and many other useful articles. Ivory taken from the hippopotamus is much harder and of a clearer white than elephant ivory, and is preferred by dentists. Mammoth ivory is secured from Siberia, where it is found as a fossil of that extinct animal. Ivory black is a black powder used in painting, and is made from sawdust and shavings of ivory by burning. Different colors, such as green, red, and black, can be given to ivory by staining or dyeing. In ancient times ivory was quite as valuable as at the present, ranging in price from $200 to $350 per hundredweight, the value depending upon its purity. Solomon brought ivory from Tarshish and used it in making a throne of ivory and gold. Ivory is mentioned by Homer. In the year 400 B. C. Phidias made statues from it, plating them with gold. Specimens of ivory used in manufacture in the times of Moses are still preserved as Egyptian relics, while in many European museums are carvings in ivory made in Nineveh and other ancient Asiatic cities. The annual ivory trade of Africa is considerable, on account of which the elephant is gradually decreasing in numbers.

IVORY, Vegetable. See **Ivory Palm.**

IVORY COAST, a colony of France in West Africa. It is bounded on the north by Senegal and the French Military Territories, east by the British Gold Coast, south by the Gulf of Guinea, and west by Liberia. The possession has a coast line of 400 miles, along which the surface is flat, and in the southwestern part is Cape Palmas. The area is 125,250 square miles. As a whole the climate is hot and unhealthful to Europeans. Large tracts of forest characterize the interior, interspersed with extensive savannas. The western boundary is formed by the Cavalry River. Other streams include the Songan, Bandama, and Tanno. Toward the north the country gradually rises, but all of the vegetation is luxuriant. The forests yield large quantities of mahogany, palm oil, rubber, and resinous plants.

All parts of the gold coast have an abundance of rainfall, but the greatest precipitation occurs between February and July. In the months of August and September is a short dry season, but copious rains begin to fall in October. Considerable trade is carried in various products, especially in coffee, bananas, maize, pineapples, rubber, and cocoanuts. The larger portion of the trade is with France. Grand Bassam and Grand Lahou are the chief seats of trade, and gold deposits occur near the former. Bingerville is the seat of administration. Ivory Coast has been a French possession since 1842, when several forts were established, and the extensive explorations of the interior date from 1885, under Captain Binger. The period of development began in 1887. Subsequently a railway line and telephone and telegraph communication were established. The colony is profitable territory, since it has great wealth in natural resources, especially in its extensive forests. It is administered by a lieutenant governor, who is subject to the governor general of French West Africa. Population, 1922, 2,054,000.

IVORY PALM, a plant native to South America, found in the Peruvian Andes and on the Magdalena River, valuable in commerce on account of yielding the vegetable ivory. It is palmlike, rather low growing, and occurs principally in damp localities. Its leaves are very large, different plants bear male and female flowers, and the fruit forms in clusters or drupes, often the size of a man's head. The drupes are massed together, having from five to nine nuts about as large as hens' eggs, and contain a close-grained and very hard albumen, resembling in color and texture the finest ivory. Ivory-palm albumen is used extensively in the manufacture of ornaments, buttons, umbrella handles, knobs for doors, and small trinkets, and is known as *vegetable ivory.* The seeds, called *corozo nuts,* are exported in large quantities from the northern part of South America to foreign markets.

IVY, a climbing plant of the ginseng or ivy family. It is native to Europe and Asia and is cultivated extensively as a climbing shrub for the walls of churches and dwellings, the stems becoming attached by means of radiating fibers. In the wild state the lower branches spread on the ground, and the main stems climb upon trees and other supports by means of aërial rootlets. The leaves are evergreen, have a smooth and shining surface, and are from three to five lobed. Many species of these plants are widely distributed, most of which bear greenish flowers and deep green or blackish berries. They include the *common ivy*, the *Japanese ivy*, and the *Virginia creeper*. Some of these plants attain a great age, growing to the top of high buildings, and developing stems several inches in diameter. Both the roots and leaves have medicinal properties, but they are not important. In some countries the plant serves in the manufacture of baskets and other useful articles. The *American ivy* found commonly in the woods is a species of woodbine.

IVY.

1, Ivy with aërial rootlets; 2, Five-lobed leaves.

IXCAQUIXTLA (ēks-kä-kēks′tlä), a town of Mexico, in the state of Puebla, southeast of the City of Mexico. It was the scene of an important battle between the Mexican revolutionists under General Mier of Teran and the Spanish forces under La Madrid. The town is occupied at present by native Mexicans and Indians. In its vicinity are numerous remains of antiquity. Population, 1922, 5,105.

IXION (ĭks-ī′ŏn), in Greek mythology, a king of Thessaly, to whom Zeus accorded the privilege of joining the festive banquet of the gods. Taking advantage of his exalted position, he endeavored to secure the favor of Hera, by which Zeus became so incensed that he struck Ixion with his thunderbolts and commanded Hermes to confine him to Tartarus, and there bind him to a wheel that revolved perpetually in the air.

IXTAPALAPA (ē-stȧ-pȧ-lä′pȧ), a town of Mexico, ten miles southeast of the capital, celebrated in early history for its splendid gardens of the Aztec emperors. It contains remains of ancient temples and altars of Aztec priests, but few traces of the ancient city now remain. At the time of the conquest by Cortes it was an important place. Population, 1922, 5,046.

IZALCO (ē-säl′kō), **Mount,** a volcano of Central America, in Salvador, 35 miles northwest of the city of San Salvador. It belongs to a group of extinct volcanoes, but itself is almost constantly in action, giving to the earth a trembling and rocking motion. This volcano was formed in 1770 and since then has been destructive at various times. The height is about 2,000 feet, but it is becoming higher gradually. It is one of the few incidents known to recent geographers where a mountain was formed in an open plain, thereby changing several streams and drainage basins.

IZARD (ĭz′ẽrd), **George,** soldier, born in Richmond, England, in 1776; died Nov. 22, 1828. He was a son of Ralph Izard (1742-1804), a soldier of the American Revolution, studied at the College of Pennsylvania, and later pursued collegiate courses in England and Germany. In 1794 he was appointed a lieutenant of artillery, became engineer of fortifications in Charleston harbor in 1798, and was promoted to the rank of a captain in 1799. He resigned from the service in 1803, but reënlisted for service in the War of 1812, during which he attained to the rank of major general. For some time he served on the northern frontier, first under Gen. Wade Hampton and later under Gen. Jacob Brown. He was criticised for his conduct while stationed near Niagara, but his course was approved by the government. President Monroe appointed him Governor of Arkansas Territory, in which office he served from 1825 until his death.

IZTACCIHUATL (ēs-tȧk-sē′whȧt′l), an extinct volcano of Mexico, situated near Popocatapetl, forty miles southeast of the City of Mexico. It is covered with snow perpetually, whence the name, which means *White Lady*. The height is 16,705 feet above sea level.

IZÚCAR (ē-sōō′kär), a city of Mexico, in the state of Puebla, situated in a sugar district near the volcano Popocatapetl. The name Matamoras Izúcar is sometimes applied to it in honor of the Mexican patriot of that name. It has good railroad connections and is noted for its sugar market. The chief buildings include the cathedral and several parochial schools. It has considerable trade and divers manufactures. Population, 1922, 12,985.

J, the seventh consonant and tenth letter of the English alphabet. It is classed as a palatal, its sound being that of *g* in *gem,* or of *dg* in *ridge.* Formerly it was interchangeable with *i,* the same character being used for both, and the separation of the two letters in English lexicons is comparatively recent. The sound does not occur in the Anglo-Saxon and was introduced from the French. It is used as a symbol in medical prescriptions at the end of a series of numbers, as vij=seven, viij=eight.

JABIRU (jăb'ĭ-rōō), the name of several birds of the stork family, native to Africa, Australia, and the tropical parts of South America. An American species is sometimes seen as far north as Florida. The body is about four feet long, with a wing extension of seven feet, and the plumage is white. The head and neck are black with reddish markings and are destitute of feathers. It is the only true American stork.

JACANA (jăk'ȧ-nä), the name of several species of small wading birds native to the warmer parts of the continents. They are related to the plovers, but quite closely resemble the rails. The toes and claws are remarkably long and slender, enabling them to walk on the floating leaves of water lilies and other aquatic plants while in search of food. The common jacana of South America is about ten inches long, has a black color marked with bright chestnut, and is abundant in Brazil and Guiana. The purple jacana is met with in Mexico and Texas and is peculiar in having a strong spur at the bend of each wing, which it uses in fighting its enemies. Several species are native to Australia and Africa, including the so-called lotus bird, named from its habit of frequenting places where the lotus grows.

JACK, a mechanical or hydraulic apparatus for lifting heavy weights. The simplest form is the screw jack, which serves to apply much lifting power, while with a hydraulic jack a single man is able to raise ten tons one foot in a minute and a half. Jack is a nickname for John. It is the name of a flag used in the navy of the United States and Great Britain, which is displayed nearest the staff or on the end of the bowsprit. Jack is likewise the name of a species of the breadfruit tree found in the South Sea islands, which bears a large fruit, often weighing thirty pounds. The fruit is eaten extensively by the natives.

JACKAL (jăk'ạl), an animal which is similar to the dog, native to many parts of Asia and Africa. It somewhat resembles the fox and wolf, but is smaller than any of the wolves. The pupil of the eye is circular, as in the dog and wolf, but the tail is more nearly like that of the fox. Jackals live in holes in the ground, have a dirty color, and eat any kind of flesh. They come out of their places of hiding to search for food during the night, often in large packs, running down the animals on which they feed. In some countries they skulk around the camps of armies where they devour the refuse matter or dig up the hastily buried dead. The jackal is easily domesticated and interbreeds with the dog.

JACKAL

JACKDAW (jăk'dạ), a common bird of the crow family, belonging to the genus *Corvus.* It is smaller than the rook, has white eyes, a short bill, a gray neck, and glossy black back and wings. The jackdaw is native to all the continents, but is more common in the Old World. It frequents towns and cities, often building its nest in chimneys, spires, towers, or other elevated places. The female lays five or six greenish eggs, covered with dark brown spots. Its food consists of larvae, insects, and worms. Jackdaws, like the crows, are very social birds, being easily domesticated, and learn to imitate the human voice.

JACK-IN-THE-PULPIT, or **Indian Turnip,** a flowering plant common in moist and shady woods. It is a perennial herb, has a turnip-shaped root, and usually bears two leaves made up of three leaflets. The root is acrid, or biting, and is used to some extent in medicine. It has small flowers grouped together and surrounded by a greenish leaf, which falls away and the red berries become exposed. About the middle of the summer all parts wither, except the stem and the berries. This plant thrives in gardens when planted in a cool and moist place.

JACK RABBIT, the name of a very large rabbit which is found on the plains of North America, but is seldom seen east of the Mississippi River. It has large ears and is noted for its long leaps and great speed. Though gray in summer, it becomes white in winter. The jack rabbit is sometimes confounded with the Norwegian hare, which has been introduced into the United States, but has a much heavier body.

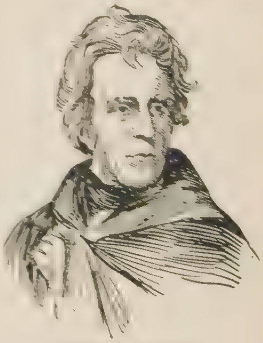
JACKSON (jăk'sŭn), a city of Michigan, county seat of Jackson County, on the Grand River, 35 miles south of Lansing. It is on the Grand Trunk, the New York Central, the Michigan Central, and other railroads. Large quantities of fruit and agricultural products are grown in the vicinity. The noteworthy buildings include the county courthouse, the public library, the Federal building, the State prison, and the high school. It has extensive car and machine shops of the Michigan Central Railway. The manufactured products include machinery, radios, pumps, cigars, agricultural implements, corsets, and woodenware. Near the city are extensive coal mines, which supply a large portion of the fuel required in manufacturing. It has an extensive jobbing trade. The vicinity was settled in 1829 and the city was incorporated in 1857. Population, 1904, 25.300; in 1920, 48,374.

JACKSON, a city of Mississippi, the capital of the State and the county seat of Hinds County, on the Pearl River, 180 miles north of New Orleans, La. It is on the Illinois Central, the Queen and Crescent, and other railroads. Among the noteworthy buildings are the State capitol, the institutions for the blind, deaf, and dumb, the Federal building, the public library, and the Governor's mansion. It is the seat of James Observatory, Millsaps College, Bellhaven College, the Old Capitol, and a fine monument of Jefferson Davis. The municipal facilities include paved streets, waterworks, electric lighting, and a system of sewerage. Among the manufactures are cotton goods, farming implements, and tobacco products. It has a large trade in merchandise, cotton, and farm products. The region was settled about 1828 and the place was incorporated in 1840. General Grant occupied it with a Union force in 1863 and the next year it was partly destroyed by General Sherman. Population, 1920, 22,679.

JACKSON, a city of Ohio, county seat of Jackson County, 45 miles northeast of Portsmouth, on the Baltimore and Ohio, and other railroads, and on several paved highways. It has a county courthouse and several fine schools. Extensive coal and iron mines are worked in the vicinity. The manufactures include leather, woolen goods, ironware, flour, and machinery. Electric lights, waterworks, and sewerage are among the public utilities. It was settled in 1795 and incorporated in 1847. Population, 1900, 4,672; in 1920, 5,842.

JACKSON, a city in Tennessee, county seat of Madison County, on the south fork of the Forked Deer River, 85 miles northeast of Memphis. It is on the Mobile and Ohio, the Illinois Central and other railroads. Among the noteworthy buildings are the county courthouse, the public library, the Lambuth College, the Union University, the Lane College, the public high school, and numerous fine business blocks and private residences. Lancaster Park is a fine public resort. The manufactures include flour, woolen goods, ironware, ice, cigars, furniture, pottery, cotton-seed oil, and farming implements. The surrounding country is agricultural and produces large quantities of cotton, cereals, and live stock. It is the seat of a large and important jobbing trade The city has street railways, electric lights, pavements, waterworks, and other conveniences. It was settled in 1810 and incorporated in 1854. Population, 1900, 14,511; in 1920, 18,860.

JACKSON, Andrew, seventh President of the United States, born in Waxhaw, S. C., March 15, 1767; died June 8, 1845. His father, Andrew Jackson, was an Irish Scotchman who emigrated to America in 1765 and died in 1767. His mother's name was Elizabeth Hutchinson, upon whom devolved the supervision of his early training. While it is not definitely known what schools he attended, it is certain that his early education was very limited. In 1781 he took up arms against the British, was taken prisoner, and afterward received a wound from an officer whose boots he refused to clean. Though intended for the ministry by his mother, he entered upon the study of law at Salisbury, N. C., in 1785, and three years later went to Nashville, Tenn., where he took up the practice of law. In 1796 he served as a member of the convention which formulated the constitution of Ten-



ANDREW JACKSON.

nessee, and in the same year was elected to Congress, the State then being entitled to only one representative. He supported Thomas Jefferson for the Presidency in 1796, became a United States Senator in 1797, but resigned his seat the following year to become a judge of the State of Tennessee, in which capacity he served until 1804.

Jackson took part in the Tennessee Indian wars, showing marked courage, and was appointed major general of militia, and, when war was declared against Great Britain in 1812, he offered his service and those of 2,500 volunteers. Soon after he led a body of 2,070 men in the direction of New Orleans, but in February, 1813, received an order at Natchez by which his troops were dismissed from further service. In October of the same year he commanded a force against the Creek Indians, whom he defeated at Talladega in November. The victory at Horseshoe Bend destroyed the Creek power, while his vigorous service gave him marked popularity and led to his appointment as major general in the regular army. In 1814 he was ordered to the Gulf of Mexico to resist an expected British invasion, where he seized Pensacola, then used as a base for British operations. In December he moved his army to New Orleans, where he gained several victories over the British in two engagements, and subsequently defeated them in a decisive battle on Jan. 8, 1815, in which he repulsed 12,000 British veterans with a loss of 2,600, while the Americans lost only thirteen wounded and six killed. The battle was the last of the war, and was fought fifteen days after the treaty of peace had been signed at Ghent, information of which had not reached General Jackson. He commanded in the war against the Seminoles of Florida in 1817-18, seized Pensacola, and executed Ambrister and Arbuthnot, two Englishmen who were accused of inciting the savages to hostile acts against the Americans. In 1821 he was appointed Governor of Florida and two years later became United States Senator from Tennessee.

The Legislature of Tennessee proposed General Jackson as a candidate for the Presidency in 1824. His three competitors were Henry Clay, William H. Crawford, and J. Q. Adams, but the election resulted without a choice, since none of the candidates received a majority. The electoral college gave Jackson 99 votes, Adams received 84 votes, Crawford received 41 votes, and Clay received 37 votes. No candidate having received a majority, the election devolved upon the Lower House of Congress. However, in the House of Representatives the result was favorable to Adams. In 1828 the Democrats succeeded in electing General Jackson to the Presidency with 178 electoral votes, while Adams received 83, and he was reëlected four years later. His policy in the civil service was to show a preference to the members of his own party, which was expressed by Senator Marcy, of New York, in this wise: "To the victor belongs the spoils." His prompt and decisive action in the question of nullification was an example of eminent statesmanship. The culminating event in this respect was brought about in 1832 by a protective tariff bill distasteful to South Carolina, which caused that State to pass a nullification act in which the law was declared inoperative and unconstitutional within its borders. Jackson acted promptly by issuing a proclamation in which he declared that the law would be enforced, and that State accordingly submitted. The veto of the bill rechartering the United States bank was another important act of his administration, which undoubtedly was in the interest of the American financial policy.

Jackson was a man of action rather than a thinker. He was decisive and unalterable in his position. As a whole he is one of the most commanding personalities in American history. Many of his decisions were determined by an organization of his friends known as the *Kitchen Cabinet.* He retired to private life at the expiration of his term and resided at the Hermitage, near Nashville, where he died and was buried.

JACKSON, Helen Fiske Hunt, authoress, daughter of Nathan W. Fiske, born in Amherst, Mass., Oct. 18, 1831; died in San Francisco, Cal., Aug. 12, 1885. She was educated at Ipswich Female Seminary, Ipswich, Mass., and in 1852 married Maj. E. B. Hunt, who died in 1863. She married William S. Jackson of Colorado Springs, Colo., in 1875, and four years later became interested in the treatment of the Indians by the United States government. In 1883 she was appointed special commissioner to inquire into the condition of the Mission Indians in California. Her first literary productions appeared over the signature of H. H., and by 1870 she attained popularity as a writer. Among her best known writings are "A Century of Dishonor," "Hetty's Strange History," "Verses by H. H.," "Ramona," "Glimpses of Three Coasts," and "Bits of Travel."

JACKSON, Samuel Macauley, educator and author, born in New York City, June 19, 1851. In 1870 he graduated at the College of the City of New York, and afterward studied at the Union Theological Seminary and the University of Leipzig. He was pastor of a Presbyterian church at Norwood, N. J., in 1876-80, and was made professor of church history in New York University in 1895. Besides contributing to periodical literature and publishing many useful books, he edited the "Encyclopaedia of Religious Knowledge." He was connected editorially with the "Standard Dictionary," "Cyclopaedia of Living Divines," "Johnson's Universal Cyclopaedia," and "Webster's International Dictionary." He was editor of the department of religion in the "New International Encyclopaedia," and in 1901 wrote "Huldreich

Zwingli," one of the series of the "Heroes of the Reformation." He died Aug. 2, 1912.

JACKSON, Thomas Jonathan, noted general, known as "Stonewall Jackson," born in Clarksburgh, W. Va., Jan. 21, 1824; died May 10, 1863. When but three years old, his father died and left the mother to support three children by teaching school and sewing. In 1842 he was appointed a student at West Point, four years later received a commission as second lieutenant, and shortly after entered the service in the Mexican War. He resigned his commission in 1851 and became professor of military tactics and mathematics in the Virginia Military Institute at Lexington, Va.

THOMAS J. JACKSON.

At the beginning of the Civil War, in 1861, he entered the Confederate army with the rank of brigadier general and was made major general at the end of the year. His promotion was based upon his eminent service in the Battle of Bull Run, where he received the name "Stonewall" from an expression made by General Bee to encourage his soldiers, when he pointed toward Jackson and exclaimed: "There is Jackson standing like a stone wall; rally behind the Virginians." His military frame was still more firmly grounded by well directed movements in the Shenandoah campaign in 1862, when he displayed much greater skill than Banks, Frémont, and McDowell, gaining the battles of Winchester, Cross Keys, and Fort Republic. He decided the victory at Gaines's Mill, June 27, 1862, by hastily joining Lee before Richmond. On Aug. 9 the Federals were defeated by him at Cedar Mountain and afterward in the second battle of Bull Run.

He captured Harper's Ferry in September, when he took seventy cannon and 13,000 prisoners, shortly joining Lee by a forced night's march, and gave valuable aid to the Confederate cause at Antietam. He commanded the right wing of Lee's army at Fredericksburg in December and at Chancellorsville on May 2, 1863, where success was assured by his skillful flanking movement around Hooker's right. While making a reconnaissance after the Battle of Chancellorsville, he was inadvertently fired upon by his own men and received three wounds. His left arm was amputated and he would undoubtedly have recovered, but a severe attack of pneumonia set in, from which he died. Stonewall Jackson was a man of much energy, deep moral feeling, and natural bravery. He never went into a battle without a prayer and always thanked God after victory. His loss to the Confederate cause was greater than that witnessed in the fall of any other man, and was never replaced.

JACKSONVILLE, a city of Florida, county seat of Duval County, on the Saint John's River, 150 miles southwest of Savannah, Ga. It is on the Southern, the Seaboard Air Line, the Florida East Coast, and other railroads. Steamship lines connect it with the leading ports of Cuba and the Atlantic coast. The noteworthy buildings include the county courthouse, the Union Depot, the Federal building, the Mason Hotel, the Confederate Soldiers' Home, the Masonic Temple, the Duval high school, the Church of the Good Shepherd, and many charitable institutions. It has a fine beach and many hotels for the accommodation of invalids and visitors. Among the manufactures are cigars, clothing, packed fruit, chemicals, caskets, paints, spices, ice, and machinery. Large quantities of cotton, fruits, and lumber are exported.

Jacksonville is the largest city of Florida. It has long been a popular resort. Many of the streets are well paved with macadam and vitrified brick. The waterworks and electric light plant are owned by the city. It was founded in 1822 and named in honor of Andrew Jackson. A fire destroyed many blocks of the city in 1901. Population, 1900, 28,429; in 1925, 93,450.

JACKSONVILLE, a city of Illinois, county seat of Morgan County, 34 miles west of Springfield. It is on the Wabash, the Chicago and Alton, the Chicago, Burlington, and Quincy, and other railroads. The city is noted for its numerous educational institutions, among them the Illinois Woman's College, the Routt College, and the Illinois College. Norbury's Sanitarium for nervous diseases is located here. It is the seat of the State institutions for the blind and the deaf and dumb. Other noteworthy features are the Carnegie public library, the county courthouse, the high school, and the Morgan County fair grounds. The leading industries include flouring mills, machine shops, and a woolen mill. It has manufactures of ice, vehicles, draining tile, railroad cars, candy, boilers, paper, and soap. The city is beautified by paved streets, public parks, waterworks, and an extensive street car system. It was platted in 1825 and incorporated in 1867. Population, 1920, 15,713.

JACKSTONES, a game played with small marbles or with pieces of iron. It is a popular amusement among children and is played in a variety of ways. Anciently it is said to have been played with the knuckle bones of sheep. Usually it is played with five stones, which are thrown in the air and caught on the back of the hand. Another way is to hold the five stones in the hand, then toss one of them into the air, the test being to lay the remaining four stones on the ground and catch the one that has been tossed up before it can land.

JACOB, the third of the Hebrew patriarchs, being the son of Isaac and Rebekah, twin brother of Esau, and grandson of Abraham. He was a favorite of his mother and by her suggestion secured the birthright of his brother Esau. Subsequently, to escape Esau's vengeance, he fled to his uncle, Laban. In 21 years he returned to Canaan with his two wives, Rachel and Leah, two concubines, and twelve sons. One of his sons, Joseph, who was a favorite of the father, was sold by his brothers and taken to Egypt. At the time of the famine in Canaan he went with his family to Egypt, where, after 17 years, he died, about 1860 B. C., aged 147 years. His embalmed body was taken to Hebron and buried.

JACOBI (yȧ-kō'bē), **Abraham,** physician, born in Hartum, Germany, May 6, 1830; died July 11, 1919. He studied at Greifswald, Göttingen, and Bonn, graduating at the last mentioned in 1851. Two years later he settled in the United States, established himself in New York, and in 1857 was one of the founders of the German dispensary. In 1860 he was made professor of diseases of children in the New York Medical College, and held a similar chair in the University of the City of New York, serving until 1870, when he became clinical professor in the medical department of Columbia University. He resigned the latter position in 1902, after serving efficiently 22 years. He was consulted as expert in many complicated cases, and through his influence pediatrics, the department of medical science relating to the treatment of the diseases peculiar to childhood, became reorganized as a distinct branch of medicine. His writings are very numerous, including many papers, reports, and articles published in periodicals. Among his books are "Dentition and Its Derangements," "Treatise on Diphtheria," "Therapeutics of Infancy and Childhood," "Pathology of the Thymus Gland," and "Intestinal Diseases of Infancy and Childhood."

JACOBI, Mary Putnam, noted physician, born in London, England, Aug. 31, 1842; died June 10, 1906. Her father resided in New York. She pursued the study of medicine in Philadelphia, New York, and Paris, and was the first woman admitted to the École de Medicine. She married Dr. Abraham Jacobi (q. v.) in 1873, was a dispensary physician in Mount Sinai Hospital for twelve years, served as professor of materia medica in the female medical college of New York, and subsequently became professor in the postgraduate medical school of New York. As a teacher and practitioner she takes high rank, while as a writer she contributed largely to medical literature. Among her publications are "Essays on Hysteria," "Value of Life," "Essay on Brain Tumor," and numerous papers of importance scientifically.

JACOBINS (jăk'ō-bĭnz), the most celebrated political club maintained during the French Revolution. It was organized at Versailles in 1789, when it was called the Club Breton. When the national assembly was removed to Paris, it increased rapidly in numbers and importance. Gradually it grew to greater controlling power than the national assembly, and by the year 1791 had 1,200 subordinate societies. Its height of power was reached in 1792, when it was foremost in the insurrectionary movements. The Commune of Paris was originated by the Jacobins, and through Robespierre they ruled supreme until his overthrow in 1794. After the execution of Robespierre, the club was prohibited by law and its halls were closed. Extreme revolutionists and those holding radical views in politics are often designated Jacobins.

JACOBITES (jăk'ō-bītz), the name of a Christian sect of Western Asia, confined chiefly to Syria and Mesopotamia. They were so named from Jacobus Barbadaeus, Bishop of Edessa, who united them into a distinct religious sect. They are Monophysites in belief; that is, they maintain that the divine and human natures in Christ were so united as to form only one nature. The patriarch of Antioch is the head of the present Jacobites, and his appointment is subject to conformation by the Sultan of Turkey. Three bishops and eight metropolitans are under the patriarch, who has his seat at the monastery of Zaphran, near Mardin. The Copts of Egypt originated from the Jacobites and like them hold to the doctrine of the single nature of Christ. They use the Syriac language in their church service, practice circumcision before baptism, and in most other respects they resemble the orthodox Greek Church.

JACOBITES, a party in Great Britain, who adhered to the male line of the house of Stuart after the revolution of 1688. They were numerous and powerful in Scotland, and for more than half a century continued to advocate the restoration of the dethroned James II. and his descendants. They rose in revolt in 1715 and in 1745, but the party became extinct after the death of the Pretender, Charles Edward, in 1788. In Ireland the Jacobites were supported by the Celts against the Saxons and by the Roman Catholics against the Protestants.

JACOB TOME INSTITUTE, an educational institution at Port Deposit, Md., established in 1894 by Jacob Tome. It was founded to promote secondary education, hence serves as a preparatory school for entrance into college or technical and professional schools. The departments include the kindergarten, a junior school for boys and girls, a high school for girls, a boarding school, and a high school for boys. The annual cost is $1,350, except for residents of Maryland, who are admitted to the boarding school for $1,200. The original endowment was $2,275,000, the library has 50,000 volumes, and the value of the property is $1,400,000. About 300 students are in attendance.

JACOTOT (zhȧ-kō-tō'), **Jean Joseph,** educator, born at Dijon, France, March 4, 1770; died July 30, 1840. He educated himself by diligent study and research, and in 1789 became a teacher of the classic languages in his native town. In 1795 he was made director in the Polytechnic School and in 1818 became professor of French literature in the University of Louvain, where he originated what is known as the system of universal instruction. According to his view, the student must learn some one thing thoroughly and refer everything to it. To this end he must repeat, reflect, and verify. In this way, by constant repetition and self-help, the pupil educates himself. Jacotot, through his signal success, originated several maxims that have been widely quoted. They include, "All is in all," "All human beings are equally capable of learning," and "Every one can teach."

JACQUARD (zhȧ-kär′), **Joseph Marie,** inventor, born in Lyons, France, July 7, 1753; died Aug. 7, 1834. He descended from humble parents, who were weavers, became interested in mechanical construction at an early age, and fell heir to two looms and a small estate at the death of his father. Having little ambition to do manual work, he spent much time in devising improvements in machinery for weaving, but, owing to ill success at first, he became a lime burner, while his wife engaged in plaiting straw. At leisure times he labored at his machines, and in 1801 secured a medal for an invention exhibited at the industrial exhibition in Paris. This invention made it possible to weave fine figured silks much more rapidly than had been possible previously. Napoleon summoned Jacquard to Paris and for useful service awarded him a liberal pension. The manufacture and use of weaving looms were opposed by many of the laborers, although the great value of his machine for producing the finer silk fabrics brought it forward and revolutionized the industry. It came into almost universal use before the death of the inventor. He secured several pensions and was granted the cross of the Legion of Honor. In 1840 a fine statue was erected to his memory in Lyons.

JACQUERIE (zhȧk-rē′), **Insurrection of the,** the name of a war conducted by the peasants against the nobles of France. It began in 1358, at the time John II. of France was a prisoner in England. The insurrection was caused by the tyranny of the nobles and had its beginning near Paris, whence it extended rapidly to the valley of the Marne and elsewhere. At first the peasants were successful and committed many atrocities, but they were defeated near Meaux by Charles the Bad of Navarre. The nobles retaliated by killing many peasants and burning their villages. The name *Jacquerie* signifies clowns, or *Jaques,* and is derived from *Jacques Bonhomme,* a name frequently applied to French peasants.

JADE, the name of a species of hornblende. It is composed chiefly of silica, calcium, magnesium, and alumina, and is valued for its hardness and toughness. The primitive peoples used it for making ornaments and utensils, and it is still employed as material for carved objects by the Chinese. Jadeite implements are found among the prehistoric ruins of Mexico, Peru, France, Spain, and Central America. Axes and adzes made of jade are seen frequently in museums, such as the famous adze found at Oaxaca, Mexico, which is now in the American Museum of Natural History in New York City.

JADWIN, Edgar, military engineer, born in Honesdale, Pa., in 1865. He studied at Lafayette College and the United States Military Academy, from which he graduated in 1890, and subsequently was assistant in government engineering. In 1898 he was in the volunteer service of the Spanish-American War, commanding part of the time at Matanzas, Cuba, where he also conducted military and sanitary surveys. Subsequent to the war he was made captain of a corps of engineers in the United States army, and in 1902 was placed in charge of the river and harbor and fortification works on the Pacific coast, where he constructed the San Pedro breakwater. He published a number of reports and pamphlets, and contributed articles on military engineering to periodical literature.

JAFFA. See **Joppa.**

JAGANNATH (jŭg-ŭ-nät′), or **Juggernaut,** meaning "Lord of the World," the name applied to the Indian god Krishna. The term likewise has reference to the eighth incarnation of Vishnu and to numerous images of this deity, the most celebrated being at Puri, a city near the Bay of Bengal. The first mention of this god occurred in 318 B. C., and numerous temples and statues were erected to him at various times since. The image is wooden and has a black face, red body, and gilt arms. The mouth is usually extended and the eyes are formed of brilliant stones. It is worshiped on festal occasions by assemblages of pilgrims who give offerings in money. Formerly they dedicated themselves in sacrifice by throwing themselves on the ground for the purpose of having the car on which the idol is mounted pass over their bodies. The deluded and confiding worshipers thought that this form of death was instrumental in conveying them into heaven. Since European occupation the practice has gone gradually into disuse, deaths occurring at the festivals now being rather accidental than designed.

JAGUAR (jȧ-gwär′), the American tiger, the largest representative of the cat family in America. It abounds chiefly in South America, though it is found in the region south of a line drawn due west from the boundary between North and South Carolina. It has a soft, rich fur, usually yellow, with large black spots, and within them are rings with smaller black spots. In strength it is little inferior to the tiger, being nearly three feet high. The limbs are large, the body is thick, and the tail is long and of nearly equal thickness throughout. The jaguar is the largest carnivorous animal native to America. Its favorite abode is in the timber, where it lives chiefly on birds, monkeys, peccaries, and other animals. It can readily climb trees and often springs upon its prey. The hide of the jaguar is valuable for footwear and gloves.

JAHN (yän), **Friedrich Ludwig,** soldier and educator, born in Lanz, Germany, Aug. 11, 1778; died in Freiburg, Oct. 15, 1852. He took courses of instruction at Halle, Göttingen, and Jena, but enlisted in the Prussian army in 1805. In 1809 he studied in Berlin, became teacher of gymnastics, and made that branch of study a popular, attractive science. His institution was attended by many students and produced a wholesome effect upon physical culture. In 1814 he secured a command in the volunteer corps, entered Paris in 1815, and in 1818 was imprisoned by the government for teaching too large a measure of liberality in political affairs. He was elected to the national assembly in 1848 and wrote numerous works on political and social questions. The influence of his teaching of gymnastics led to the formation of *Turnverein,* branches of which are still maintained in many German communities. A beautiful statue was erected to his memory at Berlin in 1872. Among his best known writings is "The German People."

JAIPUR (jī'po͝or), or **Jeypore,** a city of India, capital of a native state of the same name, situated 850 miles northwest of Calcutta. It is important as a railway center, is inclosed by fortified walls, and has a large trade in produce and merchandise. The chief buildings include the palace of the Maharaja, the Mayo Hospital, the Sanskrit College, a school of art, and a meteorological observatory. It is lighted by gas and electricity, has wide and substantially paved streets, and supports a well-constructed system of waterworks. The public park has a fine zoölogical section. Among the manufactures are muslins, jewelry, clothing, and carpets. The city was founded in 1728. Population, 1922, 168,109.

JAGUAR.

JALANDHAR (jä'lŭn-dŭr), or **Jullundur,** a city of India, capital of a district of the same name, 75 miles east of Lahore. It is located in the Punjab, in a fertile agricultural region, and is important as a railway and commercial center. The streets are regularly platted and well paved. It dates from an early period in the history of Asia. In the 4th century B. C. it was the capital of the kingdom of Rajput Katoch. Population, 1922, 69,235.

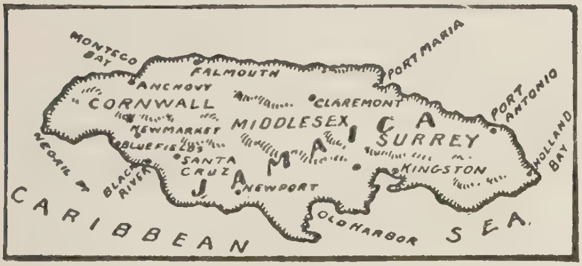
JALAP (jăl'ap), a well-known purgative medicine obtained from the tuberous root of several plants found near Jalapa, Mexico, hence its name. It grows on a tableland 6,000 feet above sea level, and is a twining plant with large white flowers and a turniplike sea level, and is a valuable cathartic, but, being disagreeable and nauseous, is seldom given alone. It is very useful in some forms of dropsy, diseases of the brain, and febrile affections of children associated with constipation.

JALAP.

JALAPA (hȧ-lä'pȧ), or **Xalapa,** a city of Mexico, capital of the state of Vera Cruz, 54 miles northwest of the city of Vera Cruz. It is situated on an elevated slope and is surrounded by a fine farming and fruit-growing region. The healthful and genial climate causes it to be favored as a health resort. Among the principal buildings are those erected by the government, a large cathedral, a Franciscan convent, and a commodious railway depot. The snow-capped summit of Orizaba may be seen from Jalapa. The city was founded at an early date in the Spanish occupation of Mexico. In 1847 it was occupied by the United States troops. Population, 1922, 20,275.

JAMAICA (jȧ-mā'kȧ), the largest island of the British West Indies, one of the Greater Antilles, situated 90 miles south of Cuba and 100 miles west of Hayti. The greatest length from east to west is 145 miles; greatest width, fifty miles; total area, 4,225 square miles. A number of islands which are politically attached to Jamaica have an area of 224 square miles. The western part is made up chiefly of lowlands, whence the surface rises toward the east, culminating in peaks with an altitude of 7,000 feet. The Blue Mountains, which occupy the eastern part, comprise the most important and highest chain. Most of the highlands are covered with forests of logwood, mahogany, braziletto, lignum-vitae, and other species of trees. Many indentations characterize the coast and furnish good harbors, such as Old Harbor and Port Royal, the harbor at Kingston. The rivers are short and unimportant, except for irrigation, and include the Salt, the Black, and the Garden rivers. The coast has a hot climate, but in the higher regions it is delightful. Rainfall is abundant in most sections. The year is divided into four seasons—two wet and two dry periods.

The government is administered by a Governor, who is appointed by the crown and assisted by a privy council. The legislative council consists of thirty members, half of which are appointed by the Governor and half are elected by popular suffrage. Kingston is the capital and seat of government. Other cities of importance are Spanish Town, Montego Bay, Savannah-la-Mar, and Falmouth. Schools are maintained by government grants and local taxation. Several normal schools, academies, and industrial schools are similarly supported. The interior commerce is facilitated by a number of railways, the total including about 245 miles. The principal exports include coffee, rum, sugar, vegetables, tobacco, and a large variety of tropical fruits. Among the imports are principally fish, rice, cotton goods, and flour.



Columbus discovered Jamaica in 1494, while on his second expedition to America. Several settlements were made by the Spaniards in 1509. The island was taken by Cromwell in 1655, and by the Treaty of Madrid was ceded to England in 1670. The abolition of slavery, while proving beneficial to the moral aspect, caused a decline in its prosperity, owing to the fact that a large portion of the mongrel races are destitute of thrift. Signs of discontent on account of British occupation manifested themselves at various times, a serious revolt occurring in 1865 and another in 1899, due largely to the prevailing system of taxation. For the purpose of relieving the laboring classes at least to some extent, the British government imposed an income tax, increased the land revenue, enlarged the stamp duties, and placed the colony under control of the colonial office. The islands politically dependent on Jamaica include the Turks, the Cayman, and the Caicos islands. The inhabitants consist chiefly of halfbreeds, Indians, and Chinese, only about 15,000 being whites. Population, 1921, 851,123.

JAMAICA, a town of New York, county seat of Queens County, twelve miles east of Brooklyn. It is located on Long Island and has direct connection with Brooklyn by railway and electric railroad lines. In 1898 it was included in the Borough of Queens of Greater New York.

JAMES, a river formed in Alleghany County, Virginia, by the union of the Cowpasture and Jackson rivers. The length is 450 miles, the course is largely toward the southeast, and it is navigable for large steamers to its confluence with the Appomattox, at City Point. Its largest northern tributary is the Chickahominy. The sixty miles nearest its mouth is an important estuary which articulates with Chesapeake Bay, while the James River and Kanawha Canal extends from Richmond to White Sulphur Springs. At Richmond it is obstructed for navigation by rapids which fall 100 feet in six miles. Lynchburg and Richmond are the most important cities on its banks, while Jamestown, the site of the first English settlement in America, is 32 miles from its mouth.

JAMES, or **Dakota,** a river of the northwestern states, rises in the east central part of North Dakota, flows south through South Dakota, and joins the Missouri about eight miles below Yankton. The James flows through a fertile prairie country and is about 400 miles long. It is popularly called the Jim River.

JAMES, Saint, The Greater, son of the fisherman Zebedee, brother of John the Evangelist, classed as one of the three greatest of the twelve apostles. Jesus called him and his younger brother, John, to forsake their work of fishing and become fishers of men. He and his brother witnessed the transfiguration, the agony in the garden of Gethsemane, the restoration to life of the daughter of Jairus, and the ascension. In 44 A. D. he suffered martyrdom under Herod Agrippa. He is the patron saint of Spain, and is credited with carrying the gospel to the Iberian peninsula.

JAMES, Saint, The Less, the eldest brother or a cousin of Jesus, called The Just in the Scriptures, a witness of Christ after his resurrection. He wrote the epistle that bears his name, was the first Bishop of Jerusalem, and spoke against those wishing to make the law of Moses binding upon Christians by a decision of the first apostolic council. He suffered death in 62 A. D. under the high priest Ananias, his death being decreed because of the rapid progress of Christianity under his preaching. The *Epistle of James* is one of the canonical books of the Bible. It was written in Greek, is of a high rhetorical character, and has caused much controversy by its doctrine of justification by works.

JAMES I., King of England and VI. of

Scotland, son of Mary, Queen of Scots, born in Edinburgh, Scotland, June 19, 1566; died March 27, 1625. After the dethronement of his mother, he was proclaimed King of Scotland, June 29, 1567. His early training was under the guardianship of the Earl of Mar, while his later education was secured under the direction of George Buchanan. He succeeded to the throne of England after the death of Elizabeth, in 1603, but soon became unpopular with his English subjects. The famous Gunpowder Plot was brought about by his undue severities against the Roman Catholics, and many other evidences that he was unpopular were manifested against him. Though a well-read scholar, he was nervous, delighted in disputes, and showed distinct marks of weakness in judgment. The most noted event of his reign was the authorized translation of the Bible into the English, known as the *King James Version.* It was made under his patronage and at his direction.

JAMES II., King of England, VII. of Scotland, son of Charles I., born Oct. 15, 1633; died in Saint Germain, France, Sept. 6, 1701. He was created Duke of York in 1643, escaped to France during the Civil War of 1648, entered the army of Louis XIV., and later enlisted in the service of Spain. He married Anne, daughter of Lord Chancellor Hyde, in 1660, avowed his conversion to Catholicism in 1671, and became king after the death of Charles II., on Feb. 6, 1685. His reign was unpopular, owing to his failure to understand the English people and because of his religious views. His persecution of the Covenanters led to a rebellion and the final invasion of William of Orange. James was soon obliged to leave England, settling in Saint Germain, France. Louis XIV. soon after granted him government support. In 1689 he attempted to regain his dominion in England by invading Ireland, but was defeated in a decisive battle at Boyne in 1690, and returned to Saint Germain, where he resided until his death.

JAMES III., King of Scotland, son of James II., born in 1451; slain June 18, 1488. He succeeded his father on the throne of Scotland under the regency of his mother and at her death, in 1465, came into full possession of the throne. His reign of 23 years was influenced largely by favorites, disturbed by international dissatisfaction, and harassed by the general war spirit of the nobles. James brought the contempt of the warlike nobles upon himself by taking delight in literary pursuits. He was thrown from a horse and murdered while leading the royal army against a rebellion incited by the nobles, who were endeavoring to depose him.

JAMES IV., King of Scotland, son of James III., born March 17, 1473; slain Sept. 9, 1513. He succeeded to the throne of Scotland after the death of his father. Writers generally agree that he possessed marked personal charms. He secured popularity by the enforcement of the laws, the encouragement of agriculture, and the dissemination of educational arts. In 1513 he invaded England with a Scottish army, but was slain in battle at Flodden on Sept. 9. He was succeeded by his son, James V. (1512-1542). The latter was the father of Mary, Queen of Scots.

JAMES, Edmund Janes, educator and economist, born in Jacksonville, Ill., May 21, 1855; died June 17, 1925. He studied at the Northwestern University and subsequently took courses at Halle and Berlin. In 1878 he was made principal of the high school at Evanston, Ill., and the following year accepted a similar position at Normal, Ill. He was made professor of political and social science in the University of Pennsylvania in 1884, from which position he resigned in 1895 to accept the chair of public administration and direct the department of university extension in the University of Chicago. He was made president of the Northwestern University, Evanston, in 1902, and two years later became president of the University of Illinois. Among his principal publications are "Federal Constitution of Switzerland," "Relation of the Modern Municipality to the Gas Supply," "Education of Business Men in Europe," "Studies of the American Tariffs," "Outline of a Professional School of Political and Social Science," "Federal Constitution of Germany," and "Growth of Great Cities."

JAMES, Henry, novelist and essayist, born in New York City, April 15, 1843. His father was the celebrated author and lecturer on religion, Henry James (1811-1882). The James family went to Europe in 1854, and resided six years in France, Switzerland, and England, which gave the subject of this sketch many educational advantages. On returning to the United States he studied law at Cambridge, but owing to delicate health discontinued study and returned to Europe, where he resided the greater portion of his time, making only occasional visits to the United States. His literary career began in 1870, when he contributed to the *Atlantic Monthly,* and shortly after wrote two novels, "Watch and Ward" and "Roderick Hudson." His extensive travels made him essentially cosmopolitan, gave him a wide range of literary treasures, and enabled him to treat national characteristics from a neutral standpoint. Though his writings exhibit a want of vigor, they abound with a wit and culture that recommends them to people of intellectual tastes. Among his best known writings are "French Poets and Novelists," "Essays in London," "The Americans," "Siege of London," "The Europeans," "Trans-Atlantic Sketches," "Lessons of the Master," "The Better Sort," and the "Awkward Age." He died February 28, 1916.

JAMES, Jesse W., outlaw and bandit, born in Clay County, Missouri, in 1847; died in 1882. He was the son of Robert James, a Baptist preacher, and became reckless because his family was persecuted on account of sympathizing with the Confederates during the Civil War. He took part with a band of guerrillas during the war and surrendered when peace was concluded. In 1866 he was outlawed for various criminal offenses, and the remainder of his life was spent in perpetrating bold crimes and in successfully evading capture. Governor Crittenden of Missouri finally offered a reward of $10,000 for his capture, either dead or alive, and he was soon after killed by Robert and Charles Ford, two of his own party, in his home near Saint Joseph, Mo. Frank James, his brother (1841-1916), was likewise noted as an outlaw and surrendered soon after.

JAMES, William, psychologist, born in New York City, Jan. 11, 1842. His father, Henry James, the theologian, gave him the advantage of a liberal education. After studying in private schools and under tutors in New York, he took courses in Europe. Degrees were granted him by Harvard and Princeton, and in 1872 he was made an instructor at Harvard University, where he was appointed to a full professorship in 1881. In 1899-1901 he was Gifford lecturer on national religion in the University of Edinburgh, Scotland. His teaching and writing are largely in the field of analytical psychology, in which he exercised a wide influence among American and European educators. His published works include "Human Immortality," "Principles of Psychology," "Varieties of Religious Experience," "The Will to Believe, and Other Essays in Public Philosophy," "Psychology, Briefer Course," and "Talks to Teachers on Psychology, and to Students on Some of Life's Ideals." He died Aug. 26, 1912.

JAMES BAY, the southern part of Hudson Bay. It is 300 miles long from north to south and about 160 miles wide. Near the central part is Agomska Island, which is about 70 miles long. Moose Factory, an important station of the Hudson's Bay Company, is located near its southwestern extremity. Thomas James wintered near the bay in 1631-32, while in search of the northwest passage, hence the name.

JAMESON (jā'mē-sŭn), **Leander Starr,** colonial administrator, born in Edinburgh, Scotland, in 1853. He was educated at the University College Hospital and the London University, graduating at the latter in 1875. After traveling in America, he settled at Kimberley, South Africa, in 1878, where he built up an extensive medical practice. He became associated with Cecil Rhodes in 1890, and soon after settled at Fort Salisbury, Mashonaland, as a representative of Cecil Rhodes and the South African Chartered Company. In 1895 he led the Jameson raid to Johannesburg, which resulted in his capture and imprisonment on conviction of a misdemeanor. The conduct of Jameson, together with the attitude of the British government, contributed largely to bringing about a crisis in South African affairs and a war with the Boers. He died Nov. 26, 1917.

JAMES STUART. See **Stuart.**

JAMESTOWN, a city of Chautauqua County, New York, on the navigable outlet of Chautauqua Lake, about 68 miles southwest of Buffalo. It is on the Erie and on several lines of electric railroads. The noteworthy buildings include the high school, two fine hotels, and the James Prendergast Free Library of about 30,000 volumes. Several popular resort towns located on Lake Chautauqua are similar to Coney Island (q. v.). It has well-paved streets, a system of public waterworks, and gas and electric lighting. The manufactures include flour, pianos, cotton goods, ironware, furniture, bicycles, boots and shoes, and worsted goods. The surrounding country is dairying and agricultural. Jamestown was platted in 1815 and incorporated in 1827. Population, 1925, 43,414.

JAMESTOWN, a city of North Dakota, county seat of Stutsman County, eighty miles west of Fargo. It is located on the James River and on several branches of the Northern Pacific Railroad, and is surrounded by a fertile farming country. In the vicinity are numerous artesian wells. Among the chief buildings are the county courthouse, the high school, the State hospital for the insane, and several large business blocks. The industries include grain elevators, machine shops, flouring mills, stockyards, and railway shops. Electric lights, telephones, and waterworks are among the public utilities. Population, 1925, 7,230.

JAMESTOWN, the locality in James City County, Virginia, where, in 1607, the first English settlement was made in America. It is about 32 miles from the mouth of the James River, on an island, which was formerly a peninsula, having been partly destroyed by the fluctuations of the river. The town was almost totally destroyed by Nathaniel Bacon in 1676 and was never rebuilt. It contains the ruins of a church and the fort.

JAMESTOWN TER-CENTENNIAL EXPOSITION, an international exhibition on the south shore of Hampton Roads, five miles from Norfolk, Va., to commemorate the 300th anniversary of the first permanent English settlement in America. The exposition was open from April 26 to November 30, 1907. The total appropriations, including those of the several states and the Federal government, aggregated $5,444,500. About 2,500 classified exhibits were on the grounds and in the buildings, including those of the arts and sciences, agriculture and horticulture, machinery and transportation, forestry and game, manufactures and liberal arts, education and social economy, mines and metallurgy, etc. Considering the splendid location, few American exhibits have been more interesting to tourists. The total admission was 2,800,000, of which about 1,500,000 were paid.

JANAUSCHEK (yä'nou-shĕk), **Franziska Romana,** actress, born in Prague, July 20, 1830; died Nov. 29, 1904. She gave evidence of much artistic talent in early youth, was educated for the profession, and first appeared in tragic rôles at Cologne. Subsequently she played successfully at Dresden, Frankfort, and other leading cities of Germany. In 1867 she visited the United States, where she attracted much attention, though her performances were exclusively in the German. On returning to Germany, she began the study of English, and visited the United States a second time in 1873, when she represented difficult rôles of Shakespearean tragedy in English. She made an extended tour in Australia in 1884, visited the United States a third time in 1896, and extended her popularity by appearing in "Lady Macbeth," "Medea," and "Marie Stuart." Later she appeared as the leading actress in "The Diamond Robbery."

JANESVILLE, a city in Wisconsin, county seat of Rock County, on the Rock River, seventy miles southwest of Milwaukee. It is on the Chicago and Northwestern and the Chicago, Milwaukee and Saint Paul railroads. The chief buildings include the county courthouse, the high school, the public library, the Y. M. C. A. building, and the State school for the blind. Among the public utilities are electric lights, paved streets, waterworks, and electric street railways. The manufacturing enterprises include iron foundries, machine shops, a cotton mill, woolen factories, and flouring mills. It has manufactures of bread, boots and shoes, and farming implements. The surrounding country is agricultural and noted for the breeding of high-grade horses and cattle. Janesville was settled in 1837 and incorporated in 1853. Population, 1905, 13,770; in 1920, 18,293.

JANEWAY (jān′wȧ), **Edward Gamaliel,** physician, born near New Brunswick, N. J., Aug. 31, 1841. He graduated at Rutgers College in 1860, and subsequently studied at the College of Physicians and Surgeons in New York City, where he was awarded a degree. In 1864 he began a successful practice of medicine. He was made dean of the University-Bellevue Medical College in 1898. For some time he was health commissioner of New York City. He served as president of a number of scientific and professional societies, including the Association of American Physicians. His success was attained in treating diseases of the chest and abdominal organs. He died Feb. 10, 1911.

JANIZARIES (jăn′ĭ-zȧ-rÿz), a corps of Turkish infantry organized by Sultan Orkhan in 1330. It was the first regular standing army organized by the Turks, was comprised largely of children captured from Christian parents and brought up as Mussulmans, and used principally for garrison duty. According to an edict, they were provided with no habitation but their quarters, were forbidden to marry, enjoyed numerous special privileges, and took the field only when the Sultan was in command. The army of Janizaries numbered 10,000 in 1362, but later developed a strength of 100,000 men, while the irregular militia included 350,000. Their remarkable bravery and daring won Ottoman victories for more than two centuries, but later they degenerated into lawless and insubordinate bands, and planned several successful plots to assassinate Turkish nobles and sultans. In the War of 1826 with Russia they revolted, which led Mahmoud II. to determine upon their destruction. Large numbers were banished by proclamation and others were executed, but those remaining made a desperate resistance. They lost 16,000 in killed and 7,000 were burned in barracks. In the organized military forces of Turkey they were succeeded by the *nizam,* the regular Turkish army, organized and disciplined on the general plan adopted by European powers.

JANUARY (jăn′u̇-ȧ-rÿ), the first month of the year in the Gregorian calendar. It is named from Janus. According to Roman tradition it was first added to the calendar, together with February, by Numa. Originally it had 29 days, to which Julius Caesar added two more. The Roman year originally consisted of only ten months and began with March. It was known by the Scandinavians as the month of Thor. The Parliament of England, in 1751, made January the first month of the year.

JANUS (jā′nŭs), a Roman deity worshiped with utmost affection and veneration. He is regarded the most ancient king of Italy, a ruler of wisdom and moderation, on account of which he was deified and the first month of the year was named in his honor. Being endowed with knowledge of all the past and the future, he was able to adopt the wisest measures for the welfare of his subjects, and, on this account, is represented in statuary with two faces—the one looking to the past and the other to the future. Instead of building temples to Janus, he was honored by all the gates of the cities being dedicated to him. The most massive gate thus dedicated was at the Forum of Rome, which was open only in the time of war. However, Roman wars were so numerous and extended that the gates of this sanctuary were closed only three times within 700 years. In ancient paintings he is represented as the doorkeeper of heaven, bearing a key in one hand and a rod and scepter in the other.

JAPAN (jȧ-păn′), an island empire of Eastern Asia, situated in the Pacific Ocean, east of Corea. It consists of a chain of islands located north of the Philippines, from which it is separated by the Bashi Channel, and its western shore is washed by the Sea of Japan. The entire Archipelago consists of an immense number of islands, about 4,000, all of which appear to be the more elevated portions of a partially submerged mountain system. These islands, which embrace Japan proper, include 500 that are inhabited. In addition the empire includes 20 islands of the Bonin group and 55 islands of the Loo-choo group, and the colonial possessions of Yezo, Pescadores, Formosa, Corea, the Kurile Islands, and the southern half of Sakhalin. From north to south it has a length of nearly 2,400 miles, but the greatest width does not exceed 250 miles. The total area, including Corea, is about 244,000 square miles. The following table contains a list of the principal islands and possessions, together with the area:

NAMES.	SQ. MI.
Iki	51
Oki	131
Awaji	219
Tsushima	266
Sado	336
Shikoku	7,031
Sakhalin	12,250
Formosa	13,418
Kiushiu	15,588
Yezo	36,299
Corea	82,000
Hondo	87,771

DESCRIPTION. It may be said that the main group of islands is crescent-shaped, with the convexity toward the Pacific Ocean, the several portions being separated by narrow channels in which numerous islets abound. The coasts are indented by many gulfs and bays, but possess few good harbors. In most of the islands the coasts rise abruptly from the sea in rocky precipices, which continue in the form of mountain chains and diversify the surface with marked elevations, alternated with beautiful and fertile valleys. The dormant volcanic mountain Fujiyama, situated on Yezo, 60 miles southwest of Tokyo, rises 12,365 feet above sea level and is the culminating point of the Japanese group of islands. However, Mount Morrison, in Formosa, is somewhat higher, rising to an elevation of 14,360 feet. Lofty ridges extend in a general direction from north to south through the central part of Hondo and Kiushiu. Numerous active volcanoes occur in different localities, while earthquake action is frequent, the most damaging disturbances on record occurring in 1707, 1783, and 1792. In the earthquake of 1792 fully 53,000 people were killed by the eruptions of Wauzendake, on Kiushiu. Along the streams and near the coast are level tracts of land. Tall grasses and forests occur in the mountains and where the land is not cultivated. The geological formations are largely igneous.

The islands being narrow and mountainous, Japan has no long rivers, though all parts of the country are well watered. Streams or streamlets furnish drainage in all of the valleys, which are beautified by many cataracts and waterfalls. The Ishikari, in Yezo, is the longest stream. It drains most of the central part, has a course of 407 miles, and discharges into the Sea of Japan. The Shinanogawa, in Hondo, flows northwest into the Sea of Japan, after a course of 320 miles. Few of the other streams exceed a length of 100 miles, and most of them are rapid and furnish navigation for only short distances. Numerous lakes are located in the larger islands, but only few are of any great extent. Lake Omi, in the south central part of Hondo, is 37 miles long and 10 miles wide. It is famed for its beauty, and is much visited by tourists in the summer season.

CLIMATE. Owing to the vast extent in latitude, the physical features are variously marked by climatic influences. The Kurile Islands have an extremely cold climate, where the sea freezes over in winter and the snow and ice never entirely disappear. On the other hand, snow and ice are never seen in the Loo-choo group, where the heat is great and the conditions are subtropical. In Hondo and the central part of the country, the climate is equable and moderately temperate, this being due in part to the warm currents in the Pacific Ocean. Although snow falls in Kiushiu and the southern part of Hondo, it remains only a short time, but in Yezo and the northern part of Hondo the winters are quite severe. While the country has an abundance of rainfall, precipitation depends largely upon the winds, hence some parts of the year are quite dry. The heaviest rains occur in June and September, and in some parts of the year it is necessary to resort to irrigation. At Hakodate the annual fall is 57 inches; at Yokohama, 70; and at Tokyo, 65. In general the climate is healthful, though the temperature frequently rises to 96° in the summer.

FLORA AND FAUNA. Japan is rich in the variety and luxuriant growth of its plants. Many of the species known to us as garden plants grow wild in different sections. These include the bluebell, violet, gladiolus, iris, and lily of the valley. The ferns are well represented and about 150 species of evergreen trees abound. Among the forest trees are the holly, cypress, yew, box, myrtle, camphor tree, mulberry, maple, birch, banyan, wax tree, lacquer tree, and many species of bamboo. Flowering plants are very numerous, both wild and cultivated, and the Japanese are noted for their festivals in which flowers play a leading part. Many shell and fin fishes abound in the streams and coastal waters, including numerous species that are important in the industries. Among the mammals are the fox, wolf, black bear, weasel, flying squirrel, hare, and deer. The birds of song and plumage are abundant, including about 360 species. Flies, cicadas, crickets, and other insects are numerous. Many species of monkeys are met with in the southern part of the country. The reptiles are represented by 300 species, including numerous snakes, frogs, and lizards.

MINING. Though not especially rich in minerals, Japan has mining interests of considerable extent. Coal is mined extensively in Kiushiu and Yezo and is found in various other parts of the country, especially in Formosa. Iron ore occurs in nearly all the islands and copper is likewise well distributed. Silver mines are worked in Hondo and gold is obtained chiefly from the alluvial sands and gravels, though auriferous quartz exists in Sado and various parts of Hondo. Petroleum has been obtained in small quantities since the year 668 A. D. Other mineral products include lead, manganese, antimony, sulphur, graphite, tin, salt, and mercury. Granite and other building stones occur in many sections of the country, but they are not used extensively at present in general building, aside from the construction of bridges and aqueducts.

Fisheries. The Japanese depend in a large measure upon the fisheries for their supply of food, since rice and fish are quite indispensable. Many species abound in the fresh and salt waters, and the abundance and variety seen in the markets are not surpassed in any country of the world. Fishes of the mackerel family are most numerous, and the golden bream is the most prized as a food fish. Many salmon-curing establishments are maintained, but they are most abundant in Yezo. Several large plants for the hatching and rearing of fish are operated under the supervision of the government as a means to replenish and maintain the supply. Sperm whales infest the waters of the northern section, yielding an abundance of ambergris. Other classes of fish include the shad, trout, flounder, halibut, sturgeon, haddock, sole, perch, and turbot.

Agriculture. Farming ranks as the chief industry, nearly half of the inhabitants being engaged in agricultural pursuits. Rice is the staple food and the principal crop, fully 215 species being cultivated, and rice land is worth about three times as much as any other arable land. The annual production of rice is about 215,000,000 bushels. Much of the product is used in the manufacture of saki, the beverage consumed most extensively. An area of 120,500 acres is utilized in the cultivation of the tea plant, and the production averages about 63,500,000 pounds of tea per annum. Other products include corn, pulse, millet, buckwheat, tobacco, rye, wheat, barley, and vegetables. Large interests are vested in the production of cotton, sugar, indigo, hemp, and silk cocoons. It must be noted that the variety of crops is very great, owing to the extent of the country in latitude, but the productions of any one section are not so greatly varied as would seem from the list of crops assigned to the entire country. To the list of productions enumerated above must be added a large number of fruits, such as the orange, persimmon, plum, banana, apple, cocoanut, grape, and strawberry. Sugar cane is an important product in the southern section.

Formerly little attention was paid to the rearing of herds and flocks, owing to the fact that the religious teaching of the Buddhists forbids the taking of life. However, the government more recently began to give much attention to the live-stock enterprise, and experimental farms are maintained to breed cattle, horses, and sheep. Butter, cheese, and milk were formerly unknown, but dairying has been introduced, and much attention is given to the rearing of cattle for milk and meat. Horses have likewise come into extensive use. Sheep rearing is promoted profitably in the elevated regions where farming is otherwise unprofitable. As a whole it may be said that the tillage of the soil is conducted with much care. The animals reared, especially poultry and sheep, are of a superior grade and receive marked attention.

Manufactures. The manufactures of all kinds have grown extensively within recent years. Japan, like China, continues to hold a high place in the production of fine ceramics, wood, stone, and bone carving, lacquer work, and inlaid articles. Pottery and porcelain products are made at 4,750 establishments. Paper, silk, and cotton textiles, machinery, and clothing are manufactured on a large scale. Shipbuilding is an important enterprise at Nagasaki, a port of Kiushiu. Saki and soy brewing, salt making, and the manufacture of sugar and tobacco are important industries. Other manufactures include gunpowder, earthenware, matches, fireworks, chemicals, and cotton and silk textiles.

As a general rule the factories are comparatively small and employ an average of from forty to fifty men, though the aggregate capital invested is extensive. Until recently the large machinery used in manufacturing and in agriculture was imported from America and Europe, but the rapid strides made in education and the industrial arts have led to a utilization of the native resources, the government encouraging the same by grants and efficient supervision. The Mikado has not only recommended appropriations for this purpose, but skilled laborers have been invited to Japan to teach and direct in utilizing its wealth of natural resources in the modern arts of manufacture. Perhaps no people in history have made more marked changes than the Japanese in the last half century, particularly in the use of machinery, modes of living, and educational arts. Since they have in large quantities all the essential substances for manufactures, such as timber, coal, iron, and stone, and possess the necessary intellectual and physical capacity, it is but natural that their cities should rise, factories develop, canals and railways extend, and all the institutions of civilization thrive.

Transportation. Railways were not built in Japan until in 1872, when a line was constructed from Tokyo to Yokohama. At present the empire, exclusive of Formosa and Corea, has in operation 8,250 miles, of which about two-fifths belong to the government. Canals have been constructed to connect a number of the streams and to provide means for reaching several of the interior lakes. Extensive transportation facilities are provided by its long coast line, which accounts for the maintenance of a large merchant marine, including about 1,875 steamships and 2,150 sailing vessels. Ocean steamers ply regularly between the leading ports of Japan and those of the principal countries of the world, including Canada, the United States, Australia, Germany, England, India, and Italy. A system of highways is maintained jointly under government and local supervision, and much attention is given to carriage by the jinrikisha, of which 225,500 are in use. The telephone and telegraph are used extensively, and submarine cables supply communication with the leading nations of the world. The American postal system was adopted almost as an entirety in 1871, and much of the mail is delivered by free carriage.

Japan has an extensive commerce, both domestic and foreign. The former has been greatly augmented by the construction of steam railroads and electric railways, as well as by the establishment of larger manufacturing enterprises than were maintained formerly. The imports somewhat exceed the exports, and the total foreign trade aggregates annually about $1,700,000,000. Among the chief exports are matches, textiles, copper, rice, tea, coal, cotton yarn, and raw and manufactured silk, and the imports include petroleum, tobacco, sugar, iron and steel, machinery, and cotton and woolen goods. The leading nations to participate in the foreign trade are Great Britain, the United States, Germany, China, France, Italy, and Belgium.

Government. The government is a limited monarchy, modeled after the constitution of the German Empire. In 1889 the present constitution was adopted, a representative government having been promised by Metusu Hito, who ascended the throne in 1868. The chief executive is known as Emperor, or Mikado, and is assisted by the imperial cabinet, the privy council, and the nine ministers of finance, foreign affairs, navy, war, justice, home affairs, communications, education, and agriculture and commerce. Legislative authority is vested in the diet or parliament, which meets annually and is constituted of an upper and a lower house. The upper house is composed of princes and titled classes who are members for life, while the lower house is constituted of representatives elected by direct vote of the people. The right to vote is based upon residence, one year in the voting district, the payment of direct taxes amounting to at least $7.50, and male citizens who have attained the age of 25 years. At present the lower house has 300 members, chosen in 258 electoral districts. Each parliament continues for a term of four years, unless previously dissolved. Government is administered locally in districts, each having an assembly elected by the people and a governor. The system of courts extends from the local and district courts to the supreme judiciary, which is the tribunal of final appeal.

The financial system is based upon the gold standard, which was adopted in 1897, though silver and subsidiary coins are circulated extensively. For the purpose of providing an adequate volume of money, paper currency redeemable in coin is in general circulation. The unit of value in the monetary system is the *yen*, which is worth in United States currency about fifty-two cents, while silver coins in circulation have a value of fifty, twenty, and ten cents. The coins which have a value of five are of nickel, and two, one, and one-half cents are of copper. The resources of the government consist of the collection of revenues accruing from imposts, excises, registrations, customs, income taxes, state services, and the telegraph and telephone systems. The standing army numbers 167,650, which, on a war footing, is increased to 675,000 men and officers. Japan has a modern navy made up of serviceable and powerful ships, and as a naval influence takes rank as the third among the nations of the world.

Education. The public school system is under the superintendence of the general government. Attendance is free and compulsory at specified ages. Equal care is exercised in the education of both sexes. All grades of work with suitable courses of study from the kindergarten to the university are maintained. Elementary schools are located in all the communities and culminate in a high school. The higher institutions include normal training schools for teachers, industrial schools to disseminate knowledge in the industries, and colleges and universities. The Imperial University at Tokio is the culminating institution of higher learning. Its courses of study articulate with those of other higher institutions maintained in college centers. This noted central institution was reorganized in 1886 and maintains departments of science, literature, law, economics, medicine, engineering, and civics. Its faculty of instructors includes ten German professors, nine English, two American, and two French. About 3,125 students receive instruction at this center of learning, at which they have access to a large library and utilize the most modern apparatus. Another noted university is maintained at Kyoto. Newspapers, magazines, and books are being produced extensively and read widely, while liberal translations have been made from the productions of other countries. In 1926 the country had 175 public libraries with a total of 1,848,950 books. The public library belonging to the government contains more than 200,000 volumes and numerous manuscripts. A strict newspaper censorship is maintained, while imprisonment for publishing matter derogatory to the government is not infrequent.

Religion. The religion of Japan is largely Shintoism, a form of worship according to whose tenets the Mikado is held to have descended from the sun goddess. It was introduced before the historical period as the ancient nonidolatrous religion. Later Buddhism and Confucianism were brought over from China. Religious worship is free to all and state support is not given to any sect. The country has about 96,500 Shinto temples, many of them beautiful structures and quite similar in design. Those in the large cities are magnificent and costly buildings, the most celebrated being the Temple of Asava at Yeddo. Worship is observed at the temples, where a profound spirit of reverence and piety is displayed, while ancestral worship also prevails. Respect for the gods and the living parents is held to be the source of all virtues. Mission stations and churches are maintained by all the leading Christian denominations and Christianity is making rapid progress.

CHARACTERISTICS. The Japanese speak various dialects of the same tongue, the only exception being the Ainos of Yezo, who number about 15,000. It is thought that the race is a mixture of the Malays of the islands situated toward the south and the Tartars who emigrated from Corea, and that their marrying and intermarrying finally resulted in the present marked Japanese type. The Aino race probably constituted the early population, which, after many centuries of wars, has become isolated to the island of Yezo. Among the characteristics of the Japanese type are an oval head and face, a well-shaped and curved nose, slightly oblique eyes, and somewhat rounded frontal bones. The expression inclines to the sordid, the complexion is rather pallid and yellowish, and the male face is almost hairless, but quite often is marked by a short and narrow mustache. They are several shades darker than the Chinese. The limbs are short in proportion to the trunk, though the stature is undersize, and the hair is dark brown, or black, and straight. The dress of both men and women has undergone marked changes within recent decades. The footwear consists of a small sock, called a *tobi,* which has a separate compartment for the great toe, is ankle high, and is covered by a sandal of straw or a wooden clog, but this covering is removed when treading on matted floors. Though the footwear of men and women is the same, there are marked differences in the headgear and dress. In 1886 a national law was enacted requiring the government officials to wear European dress when on duty, and women of the higher classes began to appear in public with European garments. Since then dress reform has been advancing rapidly even in the lower classes, and the former garments, somewhat allied to the Chinese, have either become modified or are fast disappearing.

As a people the Japanese are cleanly, courteous, frugal, kind, and pathetic. The children are admonished to parental obedience and are carefully disciplined, and all classes are required by law to secure at least an elementary education. Tobacco smoking is a common evil among both men and women, the theater is a place of popular amusement. and flowers and foliage are favorite decorations for all public places and the home. The architecture, though ornamental, lacks solidity and proof against fire. While their builders are skilled as turners, joiners, and carvers of wood, they lack a knowledge of the more substantial and serviceable in architecture. Most of the furniture is plain and simple and is kept unpainted. The interior furnishings of edifices are rather grotesque than beautiful. The employment of European and American engineers and architects in the construction of railroads and electric car lines has brought about revolutionary movements in the construction of public buildings, harbors, and aqueducts, and in shipbuilding. Modern forms of masonry and the use of steel are rapidly displacing the looser and less endurable Eastern style. The *jinrikisha,* a two-wheeled carriage with two shafts drawn by a man, is still the common vehicle for conveyance, this having displaced the larger *palanquin,* though street railways, carriages, bicycles, and automobiles are coming into use in the larger cities and gradually gaining favor among the higher classes. Buffaloes and zebus are used as beasts of burden, while the horse and ox serve mostly for agriculture and draft purposes.

INHABITANTS. Comparatively little is known of the population of Japan prior to 1872, when the first reliable census was taken. At that time the inhabitants numbered 33,110,825. Since then the country has not only become more populous by the extension of territory, but there has been an increase through the excess of births over deaths. Within the last quarter of a century the urban population has increased noticeably, owing chiefly to the larger developments of the factory system. Tokyo, in Hondo, is the capital and largest city. Other cities of importance include Yokohama, Nagasaki, Osaka, Hiroshima, Kobé, Sendai, Hakodate, and Kyoto. About eighty cities have a population of over 20,000. Japan, in 1920, exclusive of Corea, had a population of 55,751,919.

HISTORY. The history of Japan dates from 660 B. C., but the accounts published for the period of fully 1,000 years following this date are legendary. Authentic history begins in 500 A. D. Jimmu Tenno is the reputed founder of the present dynasty and, according to Japanese historians, ascended the throne in 660 B. C. Empress Jingo invaded Corea in 201 A. D., from which time the Corean civilization is said to date. The *Rongo* and *Senjimon,* two sacred Chinese books, were introduced into Japan in 285 by the Coreans. Buddhism gained a foothold in 552 and became the established religion in 595, and in 624 the government established a Buddhist hierarchy. Chinese civilization was assimilated largely through commercial relations, and after 646 great strides of advancement were made in government, science, and educational arts.

The Fujiwara family established a superior form of civil service several centuries before 792, but by that time the military classes rose, and Yoritomo became shogun or generalissimo. This ruler is known generally to Europeans as Tycoon, the name applied by the Chinese. While he was not recognized as the person in whom the reigning power was vested, he really governed, but paid homage to the Mikado, who was regarded as the spiritual emperor. At that time the spirit of militarism spread to all parts of the dominion. In many cases the Buddhist monasteries even became military centers, which continued until 1603, when Tokugawa Iyeyasu instituted an era of peace by reason of his superior statesmanship. He made Yeddo the capital and center of power, from which his lineal descendants governed until 1868. This dynasty, known as the Tokugawa, repelled the Portuguese invasion in 1638, prevented the spread of Christianity, built great cities, and maintained a commerce and interior development distinctly Japanese, excluding entirely all classes of foreigners.

In 1853 Commodore Perry entered the harbor of Uraga with a United States squadron. He secured a treaty with the shogun, on March 31, 1854, which caused Japan to be opened to the commercial nations after its seclusion for 216 years. Since then modern civilization and arts have overwhelmed the Japanese like a contagion. The feudal system that rose under military fiefs was overcome largely. In 1867-68 the shogun was overthrown and replaced by a powerful empire under the Mikado. Yeddo was renamed Tokyo, or Tokio, a constitution was granted, and modern arts were introduced in every branch of the government and the industries.

The effective strength of the Japanese military force was ably demonstrated in the Chinese-Japanese War in 1894-95. This war resulted from internal dissensions in Corea, in 1894, which were incited largely by the factions of Japanese and Chinese in that country. Each of these respectively appealed to Japan and China for aid to quell insurrections, and, as each complied, a formal war was declared in August. A Japanese army promptly invaded China, while its navy destroyed that of the Chinese within a period of three months. The loss of immense stores and 25,750 men prompted China to ask for peace early in February, 1895. The conditions of the treaty ratified a month later provided for a cash war indemnity of $150,000,000, the independence of Corea, and the cession of Formosa to Japan. Among the important events occurring since are those in relation to commercial treaties with other nations, the extension of vast internal improvements, and the prominent part taken in the Chinese War of 1900-01.

In 1904 Japan became involved in an extended war with Russia, because the latter country had occupied Manchuria. Important battles were fought early in May on the Yalu River, where General Kuroki with a large army defeated the Russians under General Sassulitch. Port Arthur fell in 1905. Japan won the great Battle of Mukden, and Admiral Togo destroyed the Baltic fleet, which events were followed by the peace treaty at Portsmouth, N. H. Subsequently Japan suppressed a rebellion in Formosa, absorbed Corea, and strengthened its position as a factor in Manchuria. In 1905 it concluded a treaty with Great Britain. Mutsuhito (q. v.), who became emperor in 1867, died in 1912. He was succeeded by his son Yoshihito, who was born August 31, 1879. In 1914 Japan joined the Triple Entente, captured Tsingtao, and annexed the Caroline Islands. It was visited by a destructive earthquake in 1923.

JAPAN CURRENT. See **Kuro Sivo.**

JAPANESE-BRITISH ALLIANCE, an agreement concluded between Great Britain and Japan. It was signed at London Aug. 12, 1905, by Lord Lansdowne, Foreign Secretary, on behalf of the former, and Baron Hayashi, envoy extraordinary of Japan, on behalf of the latter. The agreement has for its avowed object the maintenance of general peace in the region of Eastern Asia and India and the independence and integrity of the Chinese Empire.

The governments of Great Britain and Japan, being desirous of replacing the agreement concluded between them on Jan. 30, 1902, have agreed upon the following articles:

ARTICLE I.

It is agreed that whenever, in the opinion of either Great Britain or Japan, any of the rights and interests referred to in the preamble of this agreement are in jeopardy, the two governments will communicate with one another fully and frankly, and will consider in common the measures which should be taken to safeguard those menaced rights or interests.

ARTICLE II.

If by reason of unprovoked attack or aggressive action, wherever arising, on the part of any other power or powers, either contracting party should be involved in war in defense of its territorial rights or special interests mentioned in the preamble of this agreement, the other contracting party will at once come to the assistance of its ally, and will conduct the war in common, and make peace in mutual agreement with it.

ARTICLE III.

Japan possessing paramount political, military, and economic interests in Corea, Great Britain recognizes the right of Japan to take such measures of guidance, control, and protection in Corea as she may deem proper and necessary to safeguard and advance those interests, provided always that such measures are not contrary to the principle of equal opportunities for the commerce and industry of all nations.

ARTICLE IV.

Great Britain having a special interest in all that concerns the security of the Indian frontier, Japan recognizes her right to take such measures in the proximity of that frontier as she may find necessary for safeguarding her Indian possessions.

ARTICLE V.

The high contracting parties agree that neither of them will, without consulting the other, enter into separate arrangements with another power to the prejudice of the objects described in the preamble of this agreement.

ARTICLE VI.

As regards the present war between Japan and Russia, Great Britain will continue to maintain strict neutrality unless some other power or powers should join in hostilities against Japan, in which case Great Britain will come to the assistance of Japan, and will conduct the war in common, and make peace in mutual agreement with Japan.

ARTICLE VII.

The conditions under which armed assistance shall be afforded by either power to the other in the circumstances mentioned in the present agreement, and the means by which such assistance is to be made available, will be arranged by the naval and military authorities of the contracting parties, who will from time to time consult one another fully and freely upon all questions of mutual interest.

ARTICLE VIII.

The present agreement shall, subject to the provisions of Article VI., come into effect immediately after the date of its signature, and remain in force for ten years from that date.

In case neither of the high contracting parties should have notified twelve months before the expiration of the said ten years the intention of terminating it, it shall remain binding until the expiration of one year from the day on which either of the high contracting parties shall have denounced it. But if, when the date fixed for its expiration arrives, either ally is actually engaged in war, the alliance shall, *ipso facto,* continue until peace is concluded.

JAPANNING (jȧ-păn'nĭng), the art of coating articles of wood, leather, metal, and papier-maché with a variety of varnishes, which are caused to adhere by means of a high temperature applied in hot chambers during the drying process. The first step is to dry the article to be japanned, after which several coats of varnish are applied to constitute the *priming,* and subsequently the ground tint is mixed with the varnish. Several designs are secured by painting with colors, after which additional coats of varnish are applied to insure permanence. The grades of varnish used are largely mastic and shellac, though copal, dissolved in alcohol, is used to add fineness and durability. As a general process japanning is immediately between painting and enameling, and is done largely in imitation of Japanese and Chinese lacquered work.

JAPHETH (jā'pheth), one of the three sons of Noah, who was born at the time his father was about 500 years old. It is said of him in Gen. ix., 27: "God shall enlarge Japheth, and he shall dwell in the tents of Shem; and Canaan shall be his servant." He is sometimes spoken of as the ancestor of most European nations, since his descendants inhabited the isles of the Gentiles, as is reported in Gen. x., 5.

JAPURÁ (zhä-pōō-rä'), or **Yapurá,** a river of South America, rises in the Andes, where it is sometimes called the Caqueta River. It flows through the department of Cauca, in Colombia, and is the first great tributary of the Amazon above the Negro. In part of its course it forms the boundary between Ecuador and Colombia. It is navigable a distance of 620 miles, to the Cupaty Falls, and above the falls it is navigable for small vessels several hundred miles. The valley of the Japurá contains a luxuriant growth of forests, which yield rubber and sarsaparilla. The entire length is 1,350 miles.

JARNAC (zhär-näk'), **Battle of,** a military engagement at the town of Jarnac, department of Charente, France, between 15,000 Huguenots under Louis, Prince of Condé, and 26,000 Catholics under the Duke of Anjou. Owing to the superior numbers of the latter, they gained a decisive victory.

JASMINE (jăs'mĭn), a group of flowering shrubs of the genus *Jasminum,* including about 100 species. They are native to Asia, but some species are found in Southern Europe and Central Africa. In temperate climates they are cultivated in gardens for their evergreen foliage and very fragrant white flowers. Oil of jasmine is prepared from the flowers. Many of the species are twining plants. The leaves are simple or compound, the corolla is tubular, the ovary is two-lobed, and the fruit is berrylike. A species known as *Carolina Jasmine* is common to South Carolina and other sections of the South.

JASMINE.

JASON (jā'sŭn), in Greek mythology, the son of the King of Iolcos, in Thessaly, celebrated because of his connection with the expedition of the Argonauts (q. v.). When his father, Aeson, was compelled to flee from his dominion, young Jason was intrusted with the care of the Centaur, by whom he was instructed in all the useful and warlike arts. When maturing to manhood, he developed an uncontrollable desire to regain his parental inheritance, and proceeded to demand possession of the kingdom usurped by Pelias from his father. Pelias commissioned Jason to secure the golden fleece suspended on an oak in the country known as Colchis, where it was guarded by a dragon that never slept, in return for which he was promised the kingly scepter. Accordingly, he started out with a ship of fifty oars, manned with the bravest heroes of Greece, and sailed safely through many perils until he reached Colchis, where he was received with honors by Aeetes. This king gave him a daughter in marriage, and promised to allow him to take the golden fleece on condition that he would yoke two fire-breathing bulls and sow the dragon's teeth in Thebes. To do this task Jason secured the aid of Medea, the famous sorceress, and complied with the conditions. The account further enumerates the adventures of Jason and his crew in a series of combats with Aeetes, using as a military force the warriors that sprang from the dragon's teeth sown in the soil, and the perilous return to the island of Crete. Soon after he avenged the murder of his father by putting Pelias to death, but was compelled to flee to Corinth on account of an insurrection. Later he married Glauce, the daughter of the Corinthian king, and divorced Medea. Indignant at the wrongs of her husband, Medea put to death her three sons, which so despaired Jason that he threw himself on his own sword and perished on the threshold of his deserted and desolate home.

JASPER (jăs'pẽr), an opaque mineral belonging to the quartz family. It is very abundant and is prized for ornamental purposes, being susceptible to a high polish. Many shades of color, according to the impurities present, are found in jasper, including dark green, reddish brown, and brownish black. The different varieties of jasper include the Egyptian jasper, with distinct stripes; agate jasper, found in layers with chalcedony; and porcelain jasper, a kind of natural porcelain formed by the action of fire. Heliotrope, or bloodstone, is a variety of quartz having blood-red particles of jasper embodied in its mass.

JASPER, William, soldier, born in South Carolina about 1750; slain at Savannah, Ga., Oct. 9, 1779. At the beginning of the Revolution he joined the second South Carolina regiment and held the rank of sergeant. He became distinguished at Fort Moultrie on June 28, 1776, when, during an attack by the British fleet, the colors were shot down and he braved a shower of cannon shot to seize and replant them upon the works. A lieutenant's commission was offered him by Governor Rutledge, which he refused. Afterward he again distinguished himself by commanding a roving squad in an attack upon the outposts. His death resulted from a mortal wound inflicted during the engagement at Savannah.

JASSY (yäs'sē), or **Yassy,** a city of Rumania, formerly the capital of the principality of Moldavia. It is situated near the Kopoberg Mountains, in a beautiful valley of the Bachlui, a tributary of the Pruth, about 200 miles north of Bucharest. The city contains numerous edifices that date from the 14th century. Many of its streets are tortuous. It is connected by railroads and rapid communication lines, and is important as a commercial and manufacturing center. The business of the city is conducted mainly by Jews. Among its public facilities are several libraries, electric street railways, an art gallery, and numerous parks. Population, 91,500.

JÁSZBERÉNY (yäs'bĕ-rān-ÿ), a town of Hungary, on the Jazyva River, forty miles east of Budapest. The surrounding country is agricultural. It has a brisk trade in wine, corn, and live stock. It is a railway center, has electric lights, and contains a monument that marks the burial place of Attila. The inhabitants are chiefly Magyars. Population, 1916, 26,506.

JATS (ja̤ts), the name of a native race of India, confined chiefly to the Punjab and in the Northwest Provinces. About 5,000,000 of the inhabitants of India are classed as Jats. It is probable that they descended from ancestors who immigrated from Afghanistan. The Jat language belongs to the Sanskrit. These people are chiefly Brahmans, but a considerable number adhere to the Sikh and the Mohammedan faiths. They are dark in complexion, wear long beards, and engage chiefly in agriculture and stock raising.

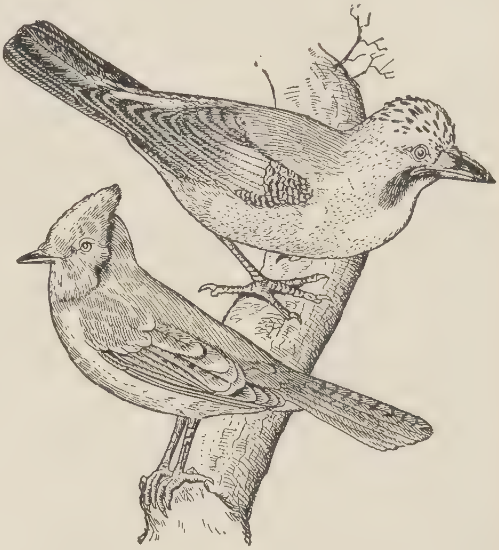
JAUNDICE (jăn'dĭs), or **Icterus,** a morbid condition due to the presence in the blood of an abnormal quantity of the bile. It is an indication rather than a form of disease, though a malignant attack is often followed by fatal results. Jaundice is marked by a yellowish color of the skin and eyes, peculiar languidness and weakness, and constipation. It results frequently from a diseased condition of the liver, or an obstruction of the bile duct that connects with the intestines.

JAVA (jä'vȧ), the principal island of the Dutch East Indies and the most important colonial possession of the Netherlands. It is separated from Sumatra by the Strait of Sunda, which bounds it on the west. The boundary on the north is formed by the Java Sea, on the east by the Strait of Bali, and on the south by the Indian Ocean. Its length from east to west is 600 miles; breadth, from 30 to 125 miles; and area, 50,554 square miles. The surface is rolling, being generally characterized by torrent-like streams and precipitous ravines. Several large marshy tracts occur in the northern part. The southern coast line rises abruptly in unbroken cliffs, several of which extend as ridges over the island. They attain their culminating peaks in Slamat, height 11,325 feet, and Semeru, height 12,240 feet above sea level. The Solo River, 175 miles long, is the largest stream. Coal, salt, sulphur, manganese, and marble are the principal minerals. The climate is genial, being moderated by sea breezes, and is favorable to the production of cereals, fruits, forage crops, and domestic animals. Birds of fine plumage and song abound. The tiger cat, snakes, wild hog, rhinoceros, panther, tiger, deer, several species of monkeys, and large bats are indigenous.

The soil is generally fertile and the valleys and slopes of the mountains are generally covered with fine forests. Among the native trees are the teak, sandalwood, mahogany, camphor, and many other tropical species. Bamboo, rattan, flowering shrubs, and vines are very numerous. The principal exports are tea, coffee, supar, cinchona, tobacco, pepper, indigo, horses, buffaloes, and cattle. Manufactories have been established, producing textiles, toys, and earthenware. Machinery, metals, petroleum, spirits, and clothing are imported to a large extent. Cable lines connect Java with Australia and Europe, and several railroads, electric car lines, and canals are operated. At present the railroad lines aggregate 1,650 miles. The trade is chiefly with the Netherlands, Germany, Japan and the United States.

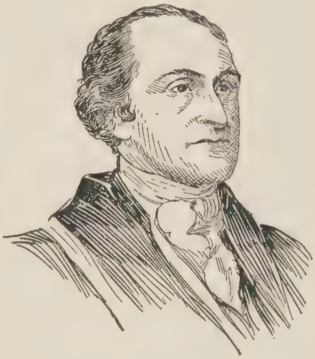
The ancient history of Java is clothed in legendry, the first authentic date being 412 A. D., when several records were made of Hindu colonies. Under the Hindu dynasties the natives were converted to Brahmanism, but this form of religion was succeeded by Mohammedanism in 1478. The island came under control of the Portuguese in 1511. In 1610 the Dutch made settlements, but they were suppressed by the English from 1811 to 1817, since which time the Dutch have governed the island as a colony without interruption. The natives belong largely to the Malay race and in religious affiliations to the Moslems, though there is a small per cent. of Christians, Brahmans, and Parsees. Several thousands of the natives are Christians. Dutch occupation has brought signal prosperity, developed the material resources, built an important commerce, and disseminated education and industrial arts through schools and several institutions of higher learning. Batavia is the capital. Soerabaya is the largest city. Besides these are numerous important seaports, among them Samarang, a thriving city. The standing army numbers 41,500 men and officers, of whom about half are Europeans. Population, 1922, 30,098,008.

JAY, a genus of birds of the crow family, smaller than the magpie and common crow. They are distinguished from the crow by having a shorter bill and wings and a blue or brownish-red color instead of black. About twenty species are well known, nearly all of which have a tuft of feathers on the top of the head and a long rounded tail. The wings are considerably shorter than the tail, which in some species is about as long as the body. They are found in both hemispheres, and live on insects, seeds, fruits, eggs, and young birds. The *blue jay* is one of the best known and handsomest species. It, like all others, has a peculiarly harsh, grating note, but when tamed partially imitates the human voice. The *English jay* is somewhat larger than the American blue jay and the general color is a light brown, inclining to red. Another familiar species, the *Canada jay,* is widely distributed in the northern part of North America.



BLUE JAY. EUROPEAN JAY.

JAY, John, statesman and jurist, born in New York City, Dec. 12, 1745; died May 17, 1829. He graduated from Columbia College in 1766, was admitted to the bar soon after, and became a member of the continental convention in 1774, at which time he wrote an address to the people of Great Britain. As a member of the second Continental Congress, he aided in making negotiations with France, and as a delegate to the New York convention assisted in preparing the State constitution. He became the chief justice of New York in 1777, was sent to Spain as minister in 1779 to secure a loan, and was instrumental in rendering valuable aid to the American cause. In 1783 he was associated with Franklin and Adams in negotiating the peace treaty with England at Paris. He was secretary of foreign affairs in 1784-89, aided Hamilton and Madison in writing the *Federalist,* and was a leading advocate of the adoption of the Constitution. When the New York convention assembled in 1788 to ratify the Constitution, he took an efficient part in the deliberations, and



JOHN JAY.

the following year was appointed by President Washington as the first Chief Justice of the United States. In 1792 he failed in the election as a Federalist candidate for Governor of New York. The Jay Treaty, negotiated with England, that country being represented by Lord Grenville, in 1794, was unpopular in many sections of the country, and greatly weakened the Federalist party. He served as Governor of New York in 1795-1801. As a statesman, diplomat, and jurist he ranks among the leaders of America, while his moral qualities and love of justice gave him high esteem, being reputed second only to Washington.

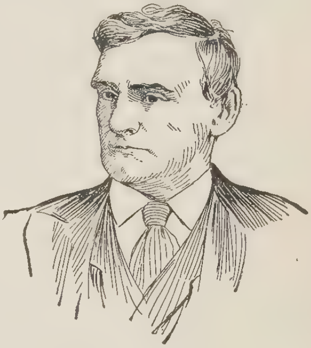
JAYHAWKER, a name which originated in Kansas at the time of the contest over slavery. The name was derived from jayhawk, a vicious bird of prey, to which the irregular and freebooting soldiers who were first called jayhawkers were likened. Later the term was used generally in the states of the West and South throughout the Civil War.

JAY TREATY, the name of a treaty concluded between the United States and Great Britain in 1794. The former country was represented by John Jay and the latter by Lord Grenville. It provided for peace and friendship between the two countries, free commercial intercourse on the American continent, the evacuation of the British posts in the United States by June, 1796, a commission to determine the northeast boundary between Canada and the United States, unrestricted navigation of the Mississippi, and indemnity to citizens of the United States who suffered losses through the capture of American merchantmen after the close of the Revolution. The treaty was generally unpopular in the United States, since it made no reference to the impressment of seamen and restricted the trade of that country in the West Indies. After a hard struggle the treaty was ratified on June 24, 1795, by a vote of twenty to ten in the Senate. It was declared that both Jay and Washington had been corrupted by money, and the former was burned in effigy in many places. In 1796 the House of Representatives voted by a narrow margin that the treaty ought to be carried into effect.

JEANNETTE (jĕn-nĕt′), a borough of Pennsylvania, in Westmoreland County, 26 miles southeast of Pittsburg, on the Pennsylvania Railroad. It has well-graded streets, waterworks, and lighting by natural gas. The surrounding country is agricultural and contains rich deposits of coal. Among the manufactures are window glass, rubber goods, hardware, and machinery. It has several fine schools and municipal buildings. The borough was incorporated in 1889. Population, 1920, 10,627.

JEFFERIES, Richard, naturalist and author, born in Wiltshire, England, Nov. 6, 1848; died Aug. 14, 1887. He first attracted attention as a journalist, in which capacity he wrote numerous articles on rural subjects. Like Thoreau, he possessed the happy faculty of minutely describing the humblest objects. Later he produced many valuable and charming works, among them "Game-Keepers at Home," "Nature Near London," "Field and Hedge-rows," "Story of My Heart," and "Dewy Morn." Sir Walter Besant wrote his biography in a work entitled "Eulogy of Richard Jefferies."

JEFFERSON (jĕf′fẽr-sŭn), **Joseph,** comic actor, born in Philadelphia, Pa., Feb. 20, 1829; died April 23, 1905. His ancestors were distinguished as actors, particularly his grandfather and great-grandfather, while his mother was a celebrated vocalist. He appeared on the stage in "Pizarro; or, Death of Rollo," at the early age of three years. The following year, in 1833, he performed complimentary equestrian acts, and in 1843 traveled through Texas and Mexico with a strolling company. In 1857 he appeared successfully in New York in several characters, played 150 nights at the London Adelphi Theater in 1865, and the next year repeated his triumph in New York. His most successful rôle was in Boucicault's play arranged from Irving's "Rip Van Winkle," in which he appeared as the principal attraction and conveyed scenes of delight and delicacy to his admirers. Later he was equally successful in "The Rivals" as *Bob Acres.* He published an autobiography in 1890, and in 1896 appeared at the head of a special company made up of the leading actors and actresses of the United States. His sister, Cornelia Jefferson Jackson (1835-1899), was successful as an actress, playing in many of the leading cities of America. He died at White Palm Beach, Florida.


JOSEPH JEFFERSON.

JEFFERSON, Thomas, third President of the United States, born in Shadwell, Va., April 13, 1743; died in Monticello, Virginia, July 4, 1826. His father, Peter Jefferson, was a planter and died when Thomas was but fourteen years old. After attending private schools, he entered William and Mary College in 1760, and seven years later began the practice of law. He was chosen representative from his county to the Virginia House of Burgesses in 1769, a position he held until the beginning of the Revolution. In 1772 he married Mrs. Martha Skelton, daughter of John Wales, an eminent Virginian jurist. The following year he was chosen a member of the first committee of correspondence established by the Colonial Legislature, became a member of the Continental Congress in 1775, and was one of a committee of five to prepare the Declaration of Independence, which, at the request of the committee, he drafted, and on July 4, 1776, it was adopted with only slight amendments.

THOMAS JEFFERSON.

Jefferson now resigned his seat in Congress and became a member of the Virginia Legislature. That body elected him Governor of the State on June 1, 1779, to succeed Patrick Henry. Congress appointed him minister plenipotentiary in 1782 to act with others in negotiating a treaty of peace with Great Britain, but the work had already been about completed so he did not sail, and the following year he was elected a delegate to Congress, in which capacity he secured the adoption of the dollar as the monetary unit and the present decimal system of coins. In 1784 he was appointed minister plenipotentiary to assist Benjamin Franklin and John Adams in negotiating commercial treaties in Europe, and the following year became minister at the French court to succeed Franklin, where he remained until September, 1789. On returning to America, he became Secretary of State under President Washington, but resigned in 1793 and retired to private life at his home. His party brought him forward as a candidate for President in 1796, but Adams received the highest number of votes, and accordingly was chosen President and Jefferson became Vice President.

In the presidential election of 1800 the Anti-Federalist, or Republican-Democratic, party, as it began to be called, again selected Jefferson as its candidate, but, as he received electoral votes exactly equal to the number cast for Aaron Burr, the election went to the House of Representatives, where he was elected President after a bitter struggle. In 1804 he was reëlected and, after serving with eminent success, retired from public life, but continued an efficient adviser of his party. His administration was marked by efficiency, strict devotion to the common welfare, and the abolition of many usages of an aristocratic nature. Among the important events are the Tripolitan War, the Louisiana Purchase, the Lewis and Clarke expedition, the Chesapeake incident, the embargo act, and the organization of the Democratic party. His state papers are able and clear. In practice he was democratic. He favored the limitation of slavery in the territories and the State of Virginia. The system of education adopted in Virginia was largely devised by him, and he promoted and superintended the founding of the university of that State. It is certain that the practical teachings of Thomas Jefferson have had a wider influence upon the public life of Americans than those of any other man. His death and that of John Adams, both occurring on July 4, 1826, on the semi-centennial of the Declaration of Independence, is a peculiar incident of history.

JEFFERSON CITY, the capital of Missouri and the county seat of Cole County, on the Missouri River, about 123 miles west of Saint Louis. It is on the Chicago and Alton, the Missouri Pacific, and the Missouri, Kansas and Texas railroads. The location is on a lofty site, about 600 feet, and is nearly in the geographical center of the State. Among the noteworthy buildings are the State capitol, the Lincoln University, the county courthouse, the State prison, two business colleges, and numerous churches and public schools. It is the seat of Jefferson City Junior College and a school for Negroes. The manufactures include brick, wagons, farming machinery, shoes, and pottery. The surrounding country is agricultural and contains valuable deposits of limestone and bituminous coal. Among the general facilities are pavements, electric and gas lights, city waterworks, and street railways. The place was settled in 1826 and incorporated in 1839. Population, 1900, 9,664; in 1920, 14,490.

JEFFERSONVILLE, a city in Indiana, county seat of Clark County, on the Ohio River, opposite Louisville, Ky. It is on the Pennsylvania Lines, the Big Four, and the Baltimore and Ohio railroads. The chief buildings include the high school, the county courthouse, the Memorial Hospital, the United States quartermaster's supply depot, and numerous churches. It has electric and gas lights, city waterworks, pavements, and a system of sewerage. Among the manufactories are machine shops, foundries, shipyards, railroad car works, shot factories, oil refineries, and flour and lumber mills. It has a considerable trade in manufactures, coal, and produce. Population, 1900, 10,774; in 1920, 10,098.

JEFFREYS (jĕf'frĭz), **George,** lord chancellor of England, born in Acton, Wales, in 1648; died April 19, 1689. He entered Westminster school as a student at sixteen, was admitted to the bar, and in 1683 became chief justice of the king's bench. His judicial life is marked with infamy and cruelty. To secure the special favor of James II., he decreed in a way to please the king without respecting justice or legal limitations. Among those suffering by his injustice are Algernon Sydney, Titus Oates, Richard Baxter, and the victims of Monmouth's unsuccessful rebellion, the latter resulting in the execution of 320 men, the transportation of 841, and the cruel and unusual punishment of many others. His boast that he had hanged more traitors than all his predecessors induced James II. to make him lord chancellor. After James was forced to abdicate, Jeffreys was cast into the Tower, where he died four months later.

JEHOSHAPHAT (jê-hŏsh'ȧ-phăt), meaning "Jehovah's judgment," the son of Asa and the fourth King of Judah. The year of his birth is generally fixed at 950, and his rule is assigned to the period between the years 915 and 890 B. C. He abolished idol worship and instead established the worship of Jehovah. Jehoram, his son, who was afterward killed by Jehu in the Battle of Ramoth-Gilead, reigned jointly with Jehoshaphat during his later years.

JEHOVAH (jê-hō'vȧ), the most sacred of the name applied to the Supreme Being in the Old Testament, in which it is used especially to designate the God of the Jewish people. Its meaning is explained in Exodus to be, "I am that I am," thus predicating self-existence in a sense that it cannot be applied to any other being. To the Jews the meaning implied is the personality of the Creator and Ruler of the universe, their Theocratic Guide, the First and the Last, and the Being above all gods. The name is of Phoenician origin and was used in a limited sense among the Israelites up to the time of Samuel, when its use spread rapidly. As a name it was deemed so holy by the Jews that they were guarded in allowing it to escape their lips, and therefore took means intentionally to mispronounce it or apply less sacred names, such as *Adonai,* which signifies lord, and *Elohim.* The latter is a less sacred name employed in some portions of the Pentateuch. Some writers think the name arose from Iao, the Phoenician sun god in the several seasons, especially in autumn, while others think it originated from Iao, the Chaldaean intelligent light.

JEHU (jē'hū), the eleventh king and founder of the fourth dynasty of Israel. He was commander of the Israelite army under Jehoram, stationed at Ramoth-Gilead. Here Elisha, the prophet, anointed him as King of Israel and announced that the dynasty of Ahab should come to an end. Jehu immediately attacked Jehoram, whom he slew with his own hand. Subsequently he beheaded 70 of Ahab's children and 42 of the brothers of Ahaziah, King of Judah, and caused the queen, Jezebel, to be thrown from the palace walls and killed. King Ahaziah and all heathen priests were executed by the adherents of Jehu, and Jehovah's worship was reëstablished. He was noted for rapid driving and a violent, reckless character.

JELLY, the juices of fruits or meats boiled with sugar so as to form an elastic consistence. This product is made most commonly from the juices of currants, grapes, raspberries, and plums, from which the liquid is pressed and afterward boiled with sugar to form the proper consistent when cold.

JELLYFISH, a bell-shaped fish, belonging to the radiated animals, so called because, when lying on the sea-sand, it looks like a mass of jelly. It is familiarly known as sea-blubber and sea-nettle, two names originating from its long, stinging tentacles. In the water it appears exceedingly beautiful, moving with much rapidity by alternately contracting and expanding its crystallinelike body. Many of the jellyfishes show a phosphorescent light at night. They live on crustaceans and small fish, which they seize with their tentacles. Several orders and many species have been described. They are devoured in immense numbers by the right whales and other animals of the sea.

JEMAPPES (zhe-mȧp'), a town of Belgium, in the province of Hainault, noted chiefly as the scene of the Battle of Jemappes. This battle was fought on Nov. 6, 1792, between the French under Dumouriez and the Austrians under the Duke of Saxe-Teschen. The French army of 46,000 men consisted largely of inexperienced volunteers and was sent in three columns against the Austrians, who had an army of 26,000 veterans. At first the French were beaten back with great losses, but they were rallied by Louis Philippe, who subsequently became king, and the engagement resulted in a defeat of the Austrians. At present the town has railroad communication and manufactures of various kinds. Population, 1922, 12,983.

JENA (yā'nȧ), a city in the grand duchy of Saxe-Weimar-Eisenach, Germany, about twelve miles southeast of Weimar. It is famous on account of the celebrated University of Jena, which was founded by John Frederick of Saxony in 1547, and was opened for instruction in 1558. The founder intended to build a great seat of learning at Wittenberg as a means to disseminate the evangelical doctrines. It soon rose to eminence and now attracts, as it has for several centuries, students from all parts of the world. The work in biology, philosophy, and theology is especially noteworthy. It has an average attendance of 800 students. Among the eminent men who were associated with the institution are Fichte, Hegel, Schelling, Schlegel, and Schiller. The university is supported by public taxes from all the Saxon states, has a splendid museum, zoölogical gardens, fine works of art, and a library containing 250,000 volumes. The city is beautified by numerous statues and parks. Population, 1922, 36,360.

JENA, Battles of, two important engagements between the Prussians and French, which occurred on Oct. 14, 1806, one near Auerstadt, Germany, and the other near Jena. In the former battle General Davout commanded 30,000 French and the Duke of Brunswick led 48,000 Prussians, while in the latter Napoleon I. commanded 90,000 French, and Prince Hohenlohe had the superior command of 65,000 Germans. The French were victorious in both battles, thereby securing advantage over the whole of Prussia.

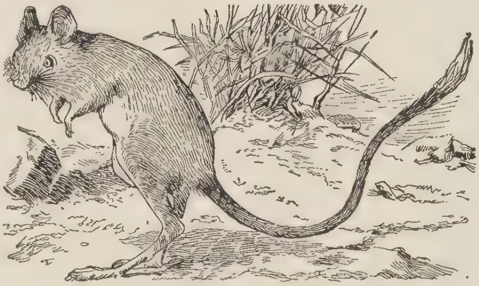
JENKINS (jĕn'kĭnz), **Edward**, author, born in Bangalore, India, July 28, 1838. He studied at McGill University, Montreal, and at the University of Pennsylvania, and subsequently took a course in law at Lincoln's Inn, London. In 1864 he was admitted to the bar and began a successful colonial practice, serving as counsel for several South African commissions. He was agent-general for Canada in 1874-76, serving as member of the royal commission on copyrights, and in 1874-80 was a Liberal member in Parliament for Dundee and was reëlected subsequently. Besides contributing to periodical literature, he published many essays and novels. His published works include "Ginx's Baby, His Birth and Misfortunes," "A Christmas Yarn," "A Secret of Two Lives," "A Study of West Indian Life," "The Russo-Turkish War," "A Paladin of Finance," and "A Week of Passion." He died June 4, 1910.

JENKS, Jeremiah Whipple, teacher and author, born in Saint Clair, Mich., Sept. 2, 1856. He graduated at the University of Michigan, studied several years in Germany, and became professor of languages in Mount Morris College. Later he held similar positions in Knox College and Indiana University, and in 1891 was made professor of politics and political economy at Cornell University. In 1902 he was appointed a special commissioner to investigate questions of labor, currency, and police, and the following year went to Mexico to advise with the minister of finance concerning the currency system of that country, having been invited to do so by the Mexican government. At various times he visited foreign countries, including India, Egypt, and the leading nations of Europe, as a means to study political and economic questions. His publications include "The Trust Problem," "Henry C. Carey as a National Economist," and "Report on Certain Economic Questions in the English and Dutch Colonies of the Orient."

JENNER (jĕn′nẽr), **Edward,** eminent physician, born in Berkeley, England, May 17, 1749; died Feb. 26, 1823. His first training was secured under an apprenticeship near Bristol, later he studied at London under John Hunter, and subsequently practiced medicine in Gloucestershire. The belief prevalent among peasants that smallpox could be prevented by using cowpox led him to study and apply the same in several cases, his success resulting in the introduction of vaccination in 1796. On May 14, 1796, James Phipps was vaccinated successfully, and was the first subject on whom the experiment proved efficient against the smallpox contagion. Soon after various physicians of Europe made similar experiments with more or less success, by which vaccination came into general use. However, the utility of vaccination as a preventive of smallpox has been questioned by many eminent practitioners. Jenner was remembered by being elected as honorary member of many learned societies. Parliament voted him grants amounting to $150,000 and a statue was erected in his honor in 1858.

JEPHTHAH (jĕf′thȧ), a Hebrew **judge,** son of Gilead, distinguished as a military leader. He defeated the Ammonites in a long campaign and for his valor was chosen ruler of Israel, being the ninth judge. Previously he had made a vow that if God would give him victory over the Ammonites, he would offer as a sacrifice to Him, in a burnt offering, the first thing that came to meet him out of his house. His only child, a daughter, met him, whom he sacrificed. Some commentators maintain that she was simply set apart as a virgin in the tabernacle. Jephthah ruled six years. A Latin drama, a poem by Tennyson, and Handel's last oratorio were suggested by the story of the sacrifice of Jephthah's daughter.

JERBOA (jẽr-bō′ȧ), or **Gerboa,** a genus of small rodents which are closely related to the rats and mice, remarkable for their long hind legs. These animals use their fore legs more like hands than as feet, and the prolonged hind legs cause their movements when running to appear as though they were flying. They burrow in the ground with the fore limbs, these being armed with powerful claws, and the long tail aids in holding the body in position while standing upon the hind legs, forming a kind of triangular support. In the winter they hibernate, especially in the colder countries, instead of storing up a supply of food as is the habit of mice. A number of species are native to Africa and Asia, and a similar ratlike rodent is found in the northern part of Europe. The jumping mouse common to North America belongs to the same class of animals. It is known locally as deer mouse.


EUROPEAN JERBOA.

JEREMIAH (jĕr-ē-mī′ȧ), the second great prophet of the Hebrews, so named to distinguish him from seven others mentioned in the Old Testament. He was the son of Hilkiah, one of the priests of Anathoth, and filled the prophetic office for 37 years, covering the reigns of kings Josiah, Jehoahaz, Jekoiakim, Jeconiah, and Zedekiah. In the thirteenth year of Josiah's reign, about 629 B. C., he was anointed, and at that time called himself a child. He lived through a very dark period of the history of Judah. Two powerful kingdoms were on either side—Egypt and Babylon. Josiah formed an alliance with Babylon and lost his life in fighting the Egyptians. Within the reign of Jehoiakim he prophesied of the destruction of Jerusalem and Judah, and later foretold that Nebuchadnezzar was appointed by God to bring upon Judah a time of desolation to last for 70 years. Zedekiah concluded an alliance with Egypt, but was defeated by Nebuchadnezzar. Jeremiah was treated kindly by the conqueror, who offered him the choice of a position in Babylon, or to remain with his chosen people. He elected to stay, but was later taken to Egypt, where, tradition says, he was put to death for talking against idolatry. He wrote two books of the Old Testament—*Jeremiah* and *Lamentations*.

JEREZ DE LA FRONTERA (hå-råth' då lȧ frôn-tå'rȧ), or **Xerez,** a city of Spain, in the province of Cadiz, sixteen miles northeast of the city of Cadiz. It is situated on the Guadalete River, has railroad facilities, and is surrounded by a fertile country, which produces large quantities of fruits, especially grapes. The chief buildings include a Moorish castle, the public library, the high school, the Convent of La Cartuja, and several theaters. It is famous as a market for wine and as a place for bullfights. The place is mentioned as a Roman colony. In 711 it was the scene of a great battle between the Saracens and the Visigoths, in which the latter were overwhelmed. Population, 1905, 64,743; in 1920, 65,042.

JERICHO (jĕr'ĭ-kō), a famous city of ancient Palestine, on a plain eighteen miles northeast of Jerusalem and six miles west of the Jordan River, near where that stream discharges into the Dead Sea. In the time of Solomon it was a flourishing city, exporting spices and balsam. Joshua made it his headquarters after his first entry into Canaan. It was destroyed by the Israelites and rebuilt by Hiel, the Bethelite, in 918 B. C. Later it was the seat of a school of prophets and the home of Herod the Great. Mark Antony assigned a portion of it to Cleopatra, Queen of Egypt. Subsequently it was destroyed in Vespasian's reign and rebuilt under Hadrian. It was repeatedly captured by the Crusaders and finally completely destroyed. The village of Er-Riha, with less than 300 inhabitants, now occupies the site.

JERICHO, Rose of, the name of a small plant of the mustard family, native to Arabia. It is a climbing shrub, with a singularly shaped blossom of a greenish-yellow color. When dried, the leaves and blossoms fold together upward, but open again when placed in water, and this process can be repeated several times. The plant was brought from Palestine to Europe by the Crusaders.

JEROBOAM I. (jĕr-o-bō'am), son of Nebat, King of Israel. He was the founder of the kingdom of Israel, which included the ten tribes of Judah that revolted against Rehoboam, only Judah and Benjamin remaining loyal to the latter. During his reign of 22 years he battled successfully against Judah, prevented a reunion of the Jews, and established idols and idol worship.

JEROBOAM II., the most prosperous King of Israel, who reigned from 823 to 782 B. C. After repelling an invasion of the Syrians, he took their cities of Hamath and Damascus, reconquered Ammon and Moab, and greatly strengthened and solidified his kingdom. His reign was marked by licentiousness, cruelty, and Baal worship. He is mentioned in the prophecies of Amos and Hosea and in 2 Kings and 1 Chronicles.

JEROME (jê-rōm'), **Jerome Klapka,** humorist, born in Wallsall, England, May 2, 1859; died June 14, 1927. He studied at Marylebone and subsequently became a clerk in a railroad office. Later he was tutor, actor, journalist, and shorthand writer. In the meantime he took an interest in literature and began reporting to several magazines, and was for a time proprietor of the magazines, *To-Day* and *The Idler*. His writings include "On the Stage—and Off," "Wood Barrow Farm," "Idle Thoughts of an Idle Fellow," "New Lamps for Old," "Three Men in a Boat," "Diary of a Pilgrimage," "Sketches in Lavender," "John Ingerfield, and Other Stories," and "Observations of Henry."

JEROME, Saint, an eminent father of the Latin Church, born at Stridon in Dalmatia, between 341 and 345; died in Bethlehem, Palestine, Sept. 30, 420. He descended from wealthy though Christian parents, was trained in early life under the direction of his father, and later studied at Rome. In 373 he located at Antioch, in Syria, but soon after passed four years in profound study in the desert of Chalcis. Later he studied in Antioch, was instructed at Constantinople by Gregory of Nazianzus, and in 382 gained many adherents by expounding the Scriptures at Rome. In 386 he established church service at Bethlehem and founded four convents, three for nuns and one for monks. While presiding over the latter, he made a translation of the Old Testament, which became the foundation of the Vulgate, and in the meantime prepared many important treatises on religious themes and church history. Among the subjects regarding which he argued are those relating to the doctrines of Origen and Palagius. His feast is celebrated on Sept. 30.

JEROME, William Travers, jurist, born in New York City, April 18, 1859. He studied at Amherst College and the Columbia Law School, and in 1884 was admitted to the bar of New York. After practicing his profession for some time, he was elected a justice of the court of special sessions. In 1895 he was chosen district attorney of New York County as a Democrat, and in 1905 was reëlected as an independent candidate. He was prominent as a member of the bar association of New York and attained prominence in prosecuting many who were indicted on criminal charges, including Harry K. Thaw, for the murder of Stanford White.

JEROME OF PRAGUE, religious reformer, born in Prague, Bohemia, in 1365; suffered martyrdom May 30, 1416. He studied at Prague, Heidelberg, and Paris, and for some time taught in the University of Cologne. In 1407 he returned from a journey to Jerusalem, and soon began to spread the doctrines of John Huss and Wycliffe. He was imprisoned at Vienna for teaching the new doctrine, but was released through the entreaty of his friends in Bohemia. When Huss was in prison at Constance, in 1415, Jerome went there in accordance with a previous promise to defend his companion before the council. Soon after he was arrested by the order of the Prince of Sulzbach, but his learning and power of debate enabled him to answer all arguments directed against his teaching. In 1415 he made a recantation of his views as to the sacrament, but the following year he solemnly retracted the recantation and was condemned to be burned at the stake. He met his fate with courage, and his ashes were taken to the Rhine and thrown into the waters.

JERSEY (jẽr′zĭ), the largest of the Channel Islands, located in the English Channel, 16 miles west of the coast of France. It is about 12 miles long from east to west, has a width of six miles, and the area is 45 square miles. The surface is high and rocky, but many of the valleys are unusually fertile. It has a rainfall of 30 inches, a mean annual temperature of 50°, and an equable and healthful climate. Large quantities of apples, pears, grapes, peaches, and other fruits are exported. Shipbuilding and oyster fishing are productive industries. The Alderney and Jersey breeds of cattle are grown extensively for dairying and export purposes. Saint Helier is the principal town. Population, 1922, 52,986.

JERSEY CITY, a city in New Jersey, county seat of Hudson County, on the Erie, the Central of New Jersey, the Pennsylvania, the West Shore, and other railroads. It is situated on the Hudson River, opposite New York, with which it is connected by steam ferries and the tunnels of the Hudson and Manhattan Railroad and the New York Vehicular Tunnel. It has 11 miles of water frontage, which form a part of the port of New York. Transportation is also facilitated by many electric urban and interurban railways. In population it ranks as the second city of New Jersey, being exceeded only by Newark.

Jersey City is well built, much of the architecture being of vitrified brick and stone. The chief buildings include the county courthouse, the Hasbrouck Institute, the city hall, the Fourth Regiment Armory, the Saint Peter's College, and the public library with more than 275,000 volumes. It has forty substantial public school buildings. In the northern part of the city are the southern ridges of the Palisades, where many modern and costly residences have been built. Other features include the soldiers' and sailors' monument, the West Side Park, and the Hudson County Boulevard, which extends entirely through Hudson County and beyond.

The streets are platted at right angles, well paved, lighted by gas and electricity, and connected with Hoboken and suburban districts by electric street railway lines. Among the numerous manufacturing establishments are radio works, planing mills, and engine and car works. It has manufacturers of jewelry, rubber goods, fireworks, copperware, castor and linseed oil, hydrants, oakum, tobacco, lead pencils, etc. The trade in crucibles, live stock, grain, and fruit is especially extensive. It has a growing jobbing trade in all classes of merchandise. The site on which Jersey City stands was formerly called Paulus Hook, but was named City of Jersey in 1820 and was chartered as Jersey City in 1838. In size it takes rank as the twenty-second city of the United States. Population, 1920, 298,079.

JERUSALEM (jḗ-rṳ′sȧ-lĕm), an ancient and interesting city of Palestine, in the Asiatic province of Syria, noted as the holy city of the Jews. It is situated 15 miles west of the Dead Sea and 32 miles east of the Mediterranean, about 2,500 feet above sea level, on the slopes of two hills. Near it are two ravines, the valley of Hinnom being toward the south and the valley of Jehoshaphat toward the east. A third depression, the Tyropean Valley, extends through the city from north to south. Mount Zion, a celebrated eminence on the southwest, rises 300 feet above the surrounding surface. Other eminences include Mount Akra on the northwest, Mount Bezetha on the northeast, Mount Moriah on the east, and Mount of Olives east of the city.

Jerusalem is mentioned as early as 1500 B. C., when the Jebusites were in possession. Joshua conquered a portion of the city, but they maintained control of at least the upper part until the time of David, who made it his capital and strengthened the portion known as Zion. In the time of Solomon it attained its greatest prosperity, but began to decline shortly after his death. Nebuchadnezzar took it from Zedekiah in 586 B. C. after a protracted siege, carried many of the Jews to Babylon in captivity, and left it in a desolate condition. Cyrus permitted the Jews to return from captivity. In 515 they rebuilt the temple, but the walls were not replaced until 455, in the time of Ezra and Nehemiah. Shortly after it was possessed by the Persians and passed consecutively to the Macedonians, Syrians, Egyptians, and Romans. It was sacked at various times, its temples were burned, and the city was razed.

Hadrian ordered Jerusalem rebuilt in 131 A. D., though it remained in a poor condition until Rome became Christianized, when it prospered for a time under the protection of Constantine the Great and his successors. With the Mohammedan conquest, in 636, it became a possession of Caliph Omar, an Arabian, and continued under Moslem rule until 1099, when the Crusaders planted the cross upon its domes and converted it into the seat of a Christian monarchy. A desperate war between European Christians and Moslems prevailed for 87 years, in which much life was spent and many institutions were ruined, but finally the city was taken by Saladin in 1187 and was never retaken by the armies of the Crusaders. Since 1244 it has been constantly under Moslem rule, being under the Turks since 1517, and still remains a part of the Ottoman Empire. The last seven centuries have been largely times of peace, Europeans being permitted to explore, settle, and build institutions within its confines.

The various parts of Jerusalem are of intense interest to the Jewish and Christian travelers as they explore the old portions of the city, visiting the various historic places, such as the site of Solomon's temple, the palace of Jewish kings, the localities frequented by Jesus Christ, and the place of the Holy Sepulcher. Many excavations have been made to study localities of interest, while the ruins and structures remaining intact have been scrutinized with a devoted reverence. Formerly three walls provided amply against invasions, though these are now largely among the ruins. It is remarkable that far more of the old city remains than is left of either Carthage, Corinth, Tyre, or even Rome, yet many of the buildings are illy constructed, almost windowless, and marked by low and dingy ceilings. A majority of the buildings are one-story and present a unique appearance as they skirt the numerous tortuous streets. The manufactures are not important, including chiefly jewelry, clothing, fabrics, crucifixes, and utensils. In 1893 a railroad was opened to Joppa. The railroad commerce, telegraphic connections, and other modern facilities have since been enlarged and brought into extensive use.

Besides the beautiful Church of the Holy Sepulcher, there are numerous Christian edifices, convents, and institutions of learning. Several mosques are maintained in conspicuous places, the most important being the Mosque of Omar, which occupies the site of Solomon's temple. Fifty years ago the inhabitants all lived within the city walls. At present nearly one-third reside in the suburbs. The Jews are immigrating rapidly and have fully 70 synagogues. They occupy the southwestern part of the city; whereas, the Christians reside chiefly in the western, and the Mohammedans in the eastern, including the Haram, or temple area. Christians and Jews are vieing with each other to secure the best sites. The different classes of people are Turks, Greeks, Armenians, Copts, Abyssinians, Syrians, Georgians, Jews, and others, the whole presenting a great mass of conglomerated humanity. The city has several fine hospitals, seminaries, and elementary schools. An extensive society known as Zionists, well organized in Europe and America, constituted of wealthy and representative Jews, is vigorously promulgating a plan whereby the city is to be reoccupied and invigorated by the Jews. The British army, under General Allenby, captured the city and a large number of Turkish prisoners in 1917. Population, 1922, 81,680. See **Zionists.**

JESTER (jĕst′ẽr). See **Court Fool.**

JESUITS (jĕz′ū-ĭts), or **Society of Jesus,** a celebrated religious order of the Roman Catholic Church, founded in the 16th century under the leadership of Ignatius Loyola. It was sanctioned by a papal bull in 1540, when the first generalship was vested in the founder. He was supported with much zeal by Saint Francis Xavier, the so-called "Apostle of the Indies," who did much effective missionary work in India and Japan. The original design of the originator and his five associates was to make a pilgrimage to Palestine and convert infidels, but, as this was averted by a Turkish war, the organization turned its efforts to meet the new conditions that had arisen after the Reformation. The vows include those of chastity, poverty, implicit obedience to superior authority, and compliance with the mandates of the Pope in going to any country or under any conditions to convert heretics and infidels. Popes Paul III. and Julius III. recognized the influence that the Jesuits might wield and granted them extraordinary privileges, among them the power to absolve from all sins and ecclesiastical penalties, to exercise all priestly functions, and to dispense themselves from the prohibitions of meat and observance of fasts, to which were added extraordinary privileges in the use of the breviary. Their efforts were directed with particular zeal against the rise of Protestantism. In their practices they carefully avoided the appearance of pride, seclusion, and superiority, rather mingling promiscuously with the common people and adapting themselves to various local circumstances.

Besides opposing Protestantism, the Jesuits labored against the claims of monarchs to counteract the establishment of papal power. Their influence spread rapidly, more or less affecting all European countries, even the new settlements of America, though the work was less effective in the United States than in Canada, Mexico, or the countries of South America. Their remarkable rise of power at European courts and among the people led many institutions of learning, professors, and the non-Jesuit clergy to fear them. It was largely for this reason that the parliament of France resisted the Jesuits in their attempts to obtain a foothold, though by the assistance of the Guises they succeeded in getting legal recognition in 1652, but were required to renounce some principles and assume the name of Father of the College of Clermont. Their power in Germany gave them marked prestige after 1549, when they secured chairs in a number of universities and exercised political influence, but they lost some power by the Jansenist controversy. Soon after the famous "Provincial Letters" from the pen of Pascal weakened their influence by pointing out doctrines and practices which he considered dangerous and vacillating, and called attention to their consecration to the policy that "the end justifies the means."

In 1773 Pope Clement XIV. suppressed the whole Jesuit order by a papal bull, but in 1814 it was restored by Pope Pius VII. During the suspension of the society the excellent institutions founded by the Jesuits in Canada were either confiscated by the government or destroyed, but since then they have been replaced and greatly enlarged. Among the more noted institutions in Canada are the Saint Mary's Academy in Montreal, which is unrivaled by any other Canadian institution of the kind, the church in Montreal, and the Saint Boniface in Manitoba. In the United States they possess a large number of educational institutions, the most noteworthy being in New York City; Washington and Georgetown, D. C.; Baltimore, M. D.; Buffalo, N. Y.; Saint Louis, Mo.; New Orleans, La.; Denver, Col.; Cincinnati and Cleveland, Ohio; Omaha, Nebr.; and San Francisco, Cal. The Jesuits have not had legal existence in Italy since 1861. They were expelled from Germany in 1872. These two countries are unfriendly to the order on account of the opposition of the Jesuits to the present governmental organizations, which they opposed during the formative period. France expelled them from their conventional establishments in 1880, which caused many Jesuits to settle in Great Britain. Within recent times they have taken unusual interest in ecumenical councils, labored earnestly among the American Indians, and exercised influence in shaping the higher policy of the Pope and the church.

JESUS CHRIST, the Greek form of the Hebrew word Joshua, contracted from Jehoshua, meaning Jehovah or Savior. It is the name applied to the son born of the Virgin Mary, who had conceived of the Holy Ghost, the third person of the Divine Trinity. He was born in Bethlehem, Palestine, in the year 4 B. C., the Christian era being designed to date from the birth of Christ, though an error in reckoning the date makes it quite certain that Jesus was born four years prior to the chronology accepted by the Christian nations. His mother, the Virgin Mary, was of the tribe of Judah, betrothed to Joseph, a carpenter by occupation, and their genealogies are given in Luke and Matthew respectively. Our information regarding the life and ministry of the founder of the Christian religion is derived almost exclusively from accounts written by the four evangelists—Matthew, Mark, Luke, and John—and references found in other portions of the New Testament. Joseph and Mary resided at Nazareth, proceeded to Bethlehem to be taxed, and while there Jesus was born in a manger, the inns being entirely occupied. He was circumcised on the eighth day in accordance with the law of Moses.

Angels announced the coming of Christ to shepherds tending their flocks on the night of his birth. Soon after wise men of the East, or Magi, came to adore and present royal gifts to the young child, proceeding to Bethlehem under the guidance of a star. The alarm felt by Herod led him to issue an edict requiring the destruction of the male children at Bethlehem less than two years old, which caused Mary and Joseph to flee with the child to Egypt for safety, and, after the death of Herod, they took up their residence in Nazareth in Galilee, from which circumstance Jesus is often alluded to as the Nazarene.

HOFFMAN'S HEAD OF CHRIST.

Little is known of the boyhood of Christ. The first definite incident is that in relation to his presence at Jerusalem when twelve years of age, where he was taken by his parents. It is related that he was lost from Joseph and Mary for three days, and when found was in consultation with the doctors, hearing instruction and asking questions. During the next eighteen years he probably labored as a carpenter, though the evangelists are silent regarding his life at this time. His public teaching began when about thirty years of age, about which time he was baptized by John in the Jordan River and recognized as the Messiah.

The succeeding events in the life of Christ occupy the important period of ministry, his death occurring in 29 A. D., or when he was about thirty-three years old. After spending forty days in the wilderness in fasting, meditation and prayer, he selected his disciples, began to teach the people, and enforced his injunctions by numerous scriptural evidences and miracles, all of which are clearly described in the New Testament. After a trial before Pilate on a pretended charge of blasphemy, he was condemned to be crucified on Golgotha, or Mount Calvary. Joseph of Arimathea took the body from the cross and placed it in a tomb, where it was guarded by Roman soldiers, but on the third day Christ arose from the dead. After appearing to his disciples and others, and spending forty days on earth, he gathered many of his followers on the Mount of Olives and ascended visibly into heaven. The life of Christ displays a remarkable character, his teachings constitute the noblest and purest system of morality, and the religion founded by him is embraced by the most enlightened people. See **Education.**

JET, a black and compact variety of lignite. It is light, hard, and capable of being turned easily, or cut into articles for charms and ornaments. It takes a fine polish. Jet is found in many parts of Europe and Asia, particularly in Asia Minor, France, and at Whitby, in England. The jewelry and various articles of ornament used for mourning are made largely of jet, though excellent imitations are produced from tempered India rubber and glass. The products made of the former are more properly known as ebonite or vulcanite.

JETTY (jĕt′tȳ), a construction of masonry or wood which projects into the sea, or some other body of water, as a wharf or pier for landing and shipping, or as a mole to protect a harbor. Jetties of another kind are constructed in rivers for the purpose of increasing the current and depth by narrowing the channel. Among the most noteworthy in the United States are those at the mouth of the Mississippi, which have caused the depth of the river to be increased from seven to thirty feet. These were planned and constructed by Capt. James B. Eads (q. v.), in 1875, under an order of Congress to improve the South Pass of the Mississippi. He built two parallel jetties with a channel of 350 feet, the west jetty being 7,800 feet and the east jetty being 11,800 feet long. The longest jetty in the world, that at the mouth of the Columbia River, is nearly five miles long. Other American jetties are at Charleston, S. C., in the Saint John's River, Florida; and at the mouth of Sabine Pass, Texas. Among the many jetties of Europe those in the Danube are of greatest utility, since they have increased the depth of the main channel of its principal mouth twenty feet and made navigation by the largest steamships possible. In numerous places jetties are serviceable in retarding the advance of sand and gravel bars.

JEVONS (jĕv′ŭnz), **William Stanley,** political economist, born in Liverpool, England, Sept. 1, 1835; died Aug. 13, 1882. He studied at University College, London, and at the London University, and shortly after settled for five years at Sydney, Australia, where he was employed in the mint. In 1866 he was appointed professor of mental philosophy, logic, and political economy at Owens College, Manchester, and in 1876 secured a similar appointment at University College, London. Among his best known productions are "Serious Fall in the Production of Gold," "Elementary Lessons in Logic," "Theory of Political Economy," and "Investigations in Currency and Finance."

JEW, The Wandering. See **Wandering Jew.**

JEWELRY (jū′ĕl-rȳ), the precious stones, gems, and ornaments prepared by jewelers, also the art of mounting precious stones. Jewelry made of metals, amber, alloys, coral, and other materials were used as personal adornments from the earliest periods of history, and were commonly worn by peoples in all stages of savagery and civilization. Relics found in the tombs of ancient Egypt, Peru, and Mexico indicate that jewelry was highly prized. Many antiquities obtained in Egypt indicate that gold work of the highest quality was used extensively for ornaments about 3,000 years ago. In many of the European museums are splendid specimens of ancient Roman and Greek jewelry produced by Etruscan artists, these being secured from the tombs of Etruria. Most jewelers of Oriental countries still pursue the primitive methods of manufacture common many centuries ago, and by their dexterity and refined taste secure products that display rare taste, but their products are surpassed in finish by those made by workmen who employ modern methods. The jewelry trade of modern times is an important branch of industry. In America its greatest center is in New York, while Paris, Berlin, Vienna, and London are important European centers of the manufacture and trade in jewelry.

JEWETT (jōō′ĕt), **Sarah Orne,** author, born in South Berwick, Me., Sept. 3, 1849. She studied at the Berwick Academy and traveled extensively in Europe and America. Her writings deal largely with the provincial life in New England, which she portrays in its finer and gentler moods. Though she produced a number of novels, her works consist chiefly of short stories and sketches. Among her principal works are "Old Friends and New," "The King of Folly Island," "A Native of Winby," "A Marsh Island," "The Country Doctor," "The Country of the Pointed Firs," and "The Queen's Twins." She died June 24, 1909.

JEWFISH, the name of several large fishes found along the coast of California and in the Gulf of Mexico. The common jewfish, or *black grouper,* has a large head and mouth and at maturity weighs about 300 pounds. It is found off the coast of Florida and in the West Indies. The jewfish of California is much larger, frequently weighing 500 pounds. It frequents rocky islands, has a brownish color, and is commonly called *black sea bass.* This fish is

(Opp. 1454) SCENES IN THE LIFE OF JESUS CHRIST.

Head of Christ
(at the age of 12 years).

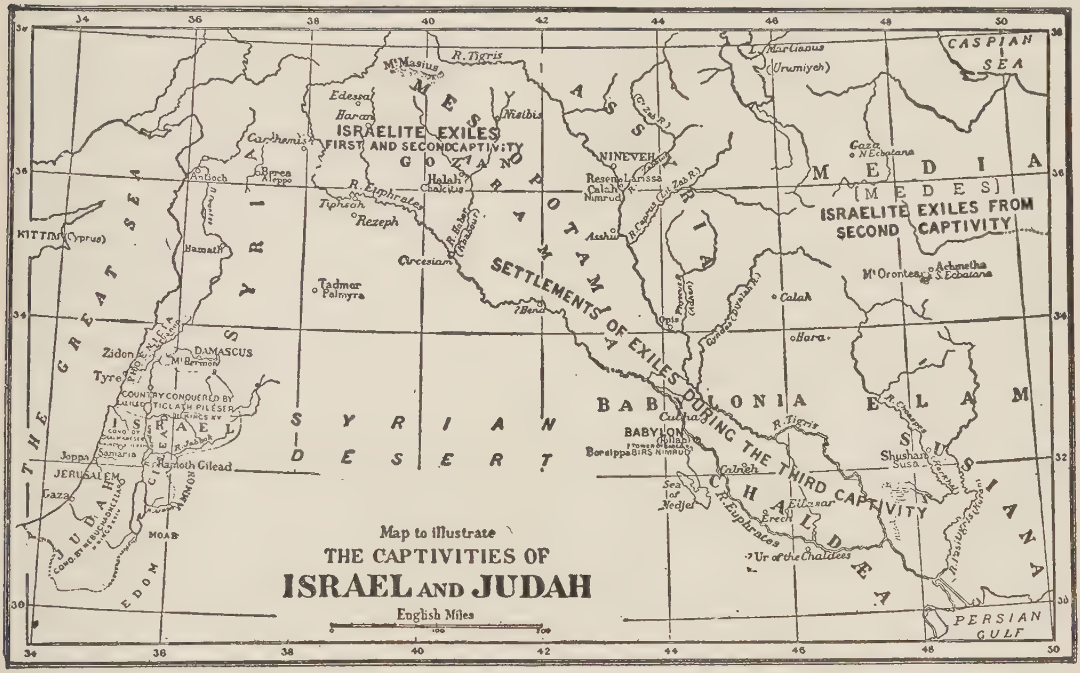
Grellet's Sacred Heart of Jesus.

Mihaly Munkacsy's (Michael Lieb) Christ Before Pilate.

prized for food and commands a high price in the market.

JEWS, a race of Semitic people which descended from Abraham, frequently called Hebrews and Israelites, but the last two names apply more properly to them prior to the Babylonian captivity. In their early period they were linked closely with Palestine.

ANCIENT HISTORY. The Jewish history dates from the time when the patriarch Abraham left Ur of the Chaldees and settled in Canaan or Palestine. He and his descendants, the houses of Isaac and Jacob, flourished in the southeastern part of Palestine until Joseph, a son of Jacob, became a high official of Egypt. At the time of a widespread famine Jacob and his other eleven sons were induced to emigrate to Goshen, Egypt, where their descendants flourished with marked prosperity for 430 years, though during the latter part of the period they were treated as bondsmen and held in abject slavery.



Map to illustrate
THE CAPTIVITIES OF
ISRAEL AND JUDAH

It is thought Rameses II. was the Pharaoh who first oppressed the Israelites, and that their deliverance was effected in the reign of his son. In 1320 B. C., or according to others in 1491, Moses became their deliverer and led them out of bondage, directing their famous exodus and wandering in the wilderness in the vicinity of Kadesh, near the boundary of Palestine. During this period they numbered several million. They were divided into twelve tribes according to their descent from the twelve sons of Jacob, receiving in the wilderness through Moses, direct from God, the ten commandments on Mount Sinai and a complete polity of government. All the laws imposed upon them in the Pentateuch were given as eternally binding. Their government was theocratic. The hereditary priesthood was vested in the tribe of Levi, originally under the direction of Aaron, the elder brother of Moses, and constituted the central idea of national unity.

At the close of the extended wanderings in the wilderness they marched northward to found settlements in Palestine, but Moses died before setting foot upon the land of promise and was succeeded by Joshua, who led the hosts of Israel and successfully conquered the regions west of the Jordan from the Canaanites in 1274 B. C. However, the native peoples were not entirely subjugated at that time, though the lands were divided among the twelve tribes, each receiving a district more or less separated from those of the others, and the whole was governed as a union of states under local chiefs. The grazing lands lying east of the Jordan were allotted to the tribes of Gad, Reuben, and the semitribe of Manasseh, and the others—Benjamin, Simeon, Dan, Judah, Ephraim, Zebulon, Asher, Naphtali, and the second semitribe of Manasseh—received lands west of the Jordan. The priestly tribe of Levi secured 48 cities, was allotted the tenth part of all agricultural products, and received authority to frequent any portion of the territory.

Joshua died about 1220 B. C., after which period the bonds of unity between the tribes were less rigid, of which fact the Philistines, a people inhabiting the coast plains along the

Mediterranean, took advantage and brought a portion of the Israelites under subjection. These wars were followed by the heroic age of the Jewish people, during which time they were governed by a succession of fifteen judges, of whom the most noted were Deborah, Gideon, Jephthah, Samson, and Samuel. Samuel was the most successful ruler since Moses, the last of the judges, and, after popular entreaty by the people, inspired Saul, a Benjamite, to become king, he anointing him as ruler of all the Jews. Though a successful warrior, Saul lacked statesmanship, but succeeded in numerous battles against the Philistines until his final defeat and death at Mount Gilboa. He was succeeded by David, his son-in-law, who ruled from 1055 until 1015. The successful reign of David caused him to become known as the greatest king of the Jewish throne. The period including the reigns of David and Solomon is designated the golden age of Jewish history.

David rose from the tribe of Judah. He was a native of Bethlehem, came in conflict with Saul until the death of the latter, and established a separate principality with Hebron as its capital. After a war of seven years, all the tribes acknowledged David king, who now transferred the seat of government to Jebus, a fortress conquered from the Canaanites, which he named the City of David, and later Jerusalem. During the long reign of forty years he conquered the Edomites, Moabites, Ammonites, and Philistines, and extended his dominion from Damascus to the northeast of the Red Sea. Solomon reigned in 1015-977. He built the great temple in Jerusalem, negotiated treaties with Tyre and Egypt, and extended the commerce from Africa to Java and Sumatra. This sovereign effected many internal improvements and showed a wisdom that became proverbial, but in the later years of his life he was weakened greatly in influence by various causes which led to interior dissensions and insurrections. In 975 the Jewish people became divided into two nations, the kingdom of Israel under Jeroboam and the kingdom of Judah under Rehoboam. The latter kingdom consisted of the tribes of Benjamin and Judah, while Israel was constituted of the other ten tribes.

The capital of Israel was first established at Sichem, but later was transferred to Samaria. Rehoboam made a number of unsuccessful attempts to reconquer Israel, but was prevented by an Egyptian invasion under Shishak, and some time after Judah averted annihilation by Israel through an alliance with the Syrians. After varied successes in wars covering many generations, Shalmaneser, King of Assyria, subdued Israel in about 720 B. C., and carried many of the leading citizens away into captivity. The succeeding Assyrian king, Sargon, completely destroyed the government of Israel and settled the principal inhabitants in Media and Assyria, while Assyrian colonists occupied the different regions, intermarried, and largely formed the historic Samaritans. Among the most noted kings that governed Israel during its prosperity are Jeroboam I., Jeroboam II., Ahab, Joram, and Pekah.

Judah was less powerful and prosperous than Israel. The kings of the house of David numbered twenty, the most successful being Jehoshaphat, Uzziah, Hezekiah, and Josiah. These kings were the most devoted to the laws of Moses and the worship of Jehovah. This kingdom was invaded by armies from Egypt and Assyria and later became tributary to Babylon. In 588 Nebuchadnezzar captured Jerusalem and carried away its riches, making the leading citizens captives. When Cyrus captured the throne of Babylon, in 538, he set the Jewish people free, after a captivity of about seventy years, restoring them to their former possessions, but made Judah a Persian province. About 42,000 Jews returned to the vicinity of Jerusalem in 538 and built the second temple in 516. In 458 Ezra, the priest, led a second return of exiles to Palestine in the reign of Artaxerxes, and Nehemiah was appointed Persian governor, under whose reign the walls of Jerusalem were rebuilt. In the period between the return of Nehemiah and the fall of the Persian Empire, the Jews were Persian subjects, but this formed an epoch during which they enjoyed their own religious and educational institutions.

When Alexander the Great led the hosts of Grecian warriors into Asia, he penetrated toward the east and conquered the Persian Empire. In 332 B. C. the Jews submitted to him under promise that they be permitted to exercise freely their religious rites. After the empire founded by Alexander became divided, Palestine was made a possession of the Ptolemies of Egypt. About 100,000 Jews were taken to Alexandria and Cyrene and settled chiefly in the region from Libya to Ethiopia. Under a system of equal rights with the Egyptians they prospered. They aided in building the great schools and libraries of Alexandria and translated the Old Testament, this translation being known as the Septuagint, or Greek version.

About 198 B. C. a Syrian and an Egyptian party rose among the Jews of Palestine. This resulted in civil strife and finally brought on an invasion by Antiochus IV., in 170, which led to great slaughter and an effort to compel the Jews to change their religion. About this time the Maccabees attained power, and, after struggling fourteen years, succeeded in driving the Syrians out and establishing the sanhedrim, a national council. The Jewish reign of this epoch is marked by the establishment of the Pharisees and Sadducees, two rival sects. A controversy between Hyrcanus II. and Aristobulus over the title to the throne caused local disturbances and led the Pharisees, in 63 B. C., to ask aid of Pompey, who made Palestine a Roman province. The Roman senate recognized

Herod the Great as King of Judea, who exercised sovereign prerogative in setting aside Jewish manners. Within his reign, in 4 B. C., Christ was born at Bethlehem, and in 6 A. D. Samaria and Judea became a united Roman province, being governed by a procurator from Caesarea. In 26 A. D. Pontius Pilate was made procurator, in whose reign Christ pursued his ministry and suffered death. Herod Agrippa was king in 41-44, persecuted the Christians, and caused the apostle James to suffer martyrdom. An insurrection occurred in 65, which resulted in the capture and destruction of Jerusalem five years later by Titus. Hadrian razed it to the ground about 135 A. D., and erected a gentile city in its place, called Aelia Capitolina. He forbade the Jews under penalty of death to enter it, and not until the time of Constantine was the name of Jerusalem revived.

After the destruction of Jerusalem by Titus, the Jewish people became scattered extensively to all countries. Since that time they have lived either as aliens or as citizens by adoption. In the time of Emperor Julian they made an unsuccessful attempt to build a new temple at Jerusalem. This movement resulted in a revival of the sanhedrim at Tiberias and the establishment of two presidencies of the sanhedrim, one at Tiberias and the other at Bagdad. From them the Jewish people attained a foothold among the learned and professional institutions suitable for the culture and higher education of the rabbis. Among the celebrated products of their scholars is the Talmud, completed in the year 500, which contains expositions of the Old Testament with additions and annotations. By reason of their superior business sagacity and continued application, the Jews became ruling spirits in the commerce of the world, established great banking centers, and rose to stations of business and political importance. They flourished alike in the countries of Christians and Moslems, though during the supremacy of the Moors in Spain their learning and prosperity were greatest. In the 11th century they were largely colonized on particular streets in the cities of Germany, Italy, and France, as a class of inferior or dishonored people, and often suffered by political and social oppression. In the 15th century Spain and Portugal required them to be baptized, to which they either consented, were put to death, or were banished from the peninsula.

MODERN HISTORY. At the beginning of the 19th century the different nations began to treat the Jews as other citizens. Shortly after the French Revolution they were placed on an equality in France. Russia followed the lead of France in 1811, and Denmark did likewise in 1814. Great Britain admitted them to Parliament in 1858 and Norway sanctioned their immigration in 1860. Other countries modified their laws more or less in harmony with France and Germany, though disturbances have prevailed periodically, the most noted of recent times occurring in Russia in 1892 and in France in connection with the Dreyfus affair in 1899. In the United States they have always had equal rights with other peoples. The tenacity with which the Jews of modern times retain their racial characteristics, and cleave to the religion of their fathers among alien nations and peoples, is remarkable. Some of the greatest names in modern history are those of Jews, among them Rothschild, Disraeli, Mendelssohn, Spinoza, Heine, Meyerbeer, etc. The greatest number of Jewish people are in Russia, where they aggregate 5,850,000; Austria-Hungary, 1,950,000; the United States, 1,345,000; Germany, 615,000; and Rumania, 450,000. The total Jewish population of the world is estimated at 15,800,000.

LANGUAGE. The Jewish language is a branch of the Semitic family of languages. Perhaps originally it was the language spoken by the Phoenicians, and was adopted from those people by Abraham and his family at the time that patriarch settled in Palestine. The religious and moral notions of all Hebrews caused many distinct characters to be impressed upon it, as also did the long residence in Egypt and the sojourn in the wilderness, thus making it a dialect distinct in many essentials. While the oldest sacred writings known to us are in the Hebrew, there are secular works and inscriptions coming to us from older sources. It is quite common to distinguish the language by two distinct periods, including the time up to the Babylonian exile, and from the exile up to the present. In the former period comparatively few foreign words were mixed with the language, while in the latter time many Arabian and Aramaic elements became incorporated. No material progress was made in securing a grammatical treatment of the language until about the 6th century A. D., when several technical texts were published. In the written language are many accents and marks of punctuation, but it has no capital letters. It has twenty-two consonants, five letters have a separate final form, and the vowels are designated by marks above or below the letters.

LITERATURE. The literature is of vast importance because of its wide influence on the Christian and Mohammedan nations. It surpasses the literature of all other ancient peoples on account of the vigorous style of its poetry and its religious characteristics, and at the same time is the most reliable source of the early history of the human race. The Bible (q. v.) is the greatest product of Jewish literature. No work of ancient or modern times has been read and studied with an equal interest and devotion, and its precepts have influenced human action more than any other works, either singly or collectively. The first period of Jewish literature extends to 143 B. C., and one of its greatest products is the "Midrash," a work making inquiry into the meaning of sacred writings. In the second period, extending from 143 B. C., to 135 A. D., the "Midrash" was divided into the "Halacha" and "Hagada," the former relating to common law, and the latter embracing the religious teachings. Josephus in this period wrote his "History of the Jewish Wars," Philo compiled various philosophical works, and divers writers produced the different books of the New Testament and the *Apocrypha*. The latter is now seldom published in the edition of the Bible which is commonly used by Protestants.

The third period is included between 135 and 475 A. D., in which time the schools of Palestine and Rome gave instruction from the "Halacha" and "Hagada." In this time the scholars versed in the "Mishna," the oral law, exercised a wide influence, and the "Talmud," a work containing the "Mishna," was written. From this time on the Jewish people became widely scattered in many countries, thus causing them to acquire the language of the lands of their adoption. Many writers of modern nations are of Jewish extraction, the products being in various languages, and including works in philosophy, law, science, poetry, music, medicine, mathematics, philology, and higher criticism.

JEW'S-HARP (jūz′härp), a metallic musical instrument. The sound is produced by inhaling and ejecting air from the lungs, while the instrument is held between the teeth, the metallic tongue, or spring, being struck by the finger. Instruments of this kind are made wholly of steel. The sizes vary from small toys to those used to produce musical tones of considerable volume and in ryhthmical order.

JEYPORE. See **Jaipur.**

JEZEBEL (jĕz′e-bĕl), Queen of Israel and wife of Ahab. She is noted for the evil influence exercised by her in dishonoring Jehovah and introducing idol worship. Under her influence the Jews were persecuted until all but about 7,000 turned from the true God. She continued to exercise influence during the reign of her son Jehoram, but was killed by the command of Jehu, who caused her to be flung from the upper walls of the palace to the ground beneath, where she was mutilated by chariots and devoured by dogs.

JHELAM (jē′lŭm), or **Jhelum,** a large river of India, in the Punjab, one of the affluents of the Chenab. It rises in Kashmir, passes through the Himalayas in the defile of Barambula, and thence has a southward course. It discharges into the Chenab River after a course of 490 miles. The Jhelam is navigable for a distance of 300 miles, and is noted for its fisheries.

JIGGER (jĭg′gẽr), or **Chigoe,** a kind of small flea, native to the West Indies and South America. It resembles the common flea, but is somewhat smaller. Its bite is at first indicated by a slight itching, but later it becomes quite painful. Several species have been described, some of which attack the eyelids of poultry. The name is applied in the United States to a small scarlet insect that is troublesome to the skin of man. It is common to the grasses in the Southern States, where it subsists most of its life. When it attacks the skin, it burrows and deposits its eggs, causing quite an annoyance by producing an itching and tingling sensation. Salt-water bathing has a relieving effect.

JINGOISM (jĭn̲′gō̇-ĭz′m), a term applied to an individual or party who advocates a warlike policy. The expression, by *jingo,* originated from a corruption of the Basque word *Jinkoa,* and from it the term jingoism was coined in 1877, when the political parties in England disagreed as to the policy of intervening in the war between Russia and Turkey. Gladstone and the Liberals advocated a neutral policy, while Beaconsfield and the Conservatives favored intervention to aid Turkey against Russia. Since then the term has been in popular use in Great Britain and the United States, and is usually applied to the advocates of an imperial policy. The doggerel sung at a musical hall in London at the time has been widely published:

"We don't want to fight;
But by Jingo, if we do,
We've got the ships,
We've got the men,
We've got the money, too!"

JINRIKISHA (jĭn-rĭk′ĭ-shȧ), a light carriage drawn by a man, who goes between the shafts. This vehicle has two wheels and is constructed to carry either one or two persons. Some are provided with a hood, which is attached to the upper part of the seat, and two springs make the vehicle quite easy. The man employed to pull this vehicle is called the *hiki.* Where long distances are to be made or a heavy load is to be drawn, he is assisted by one or more outrunners, who pull by cords attached to the crossbar. The jinrikisha was invented in 1868 and was shortly after introduced in China, Japan, and India, where a large number are in use. The rate charged is from one to five cents a mile, depending upon the speed and the character of the road to be covered.

JITOMIR (zhē̇-tō̇′mē̇r), or **Zhitomir,** a city in Russia, capital of the government of Volhynia, on the Teterev River, about eighty miles west of Kiev. It is a commercial center and contains numerous manufactories. The place has railway facilities, several schools, and a number of government buildings. Population, 1922, 82,084.

JOAB (jō′ab), a celebrated Hebrew warrior, nephew of King David, who flourished in the days of Saul. David gave him command of the entire army, but he was soon after displaced by the appointment of Amasa on account of not being trustworthy. In revenge he killed Amasa under the guise of deception and joined in a

JOAN OF ARC LISTENING TO THE VOICES

(Opp. 1459)

rebellion with Adonijah, but later was captured by Solomon and slain at the temple, where he had sought safety in hiding.

JOACHIM (yō′ȧ-kēm), **Joseph, violinist,** born near Pressburg, Hungary, June 28, 1831; died Aug. 15, 1907. He studied music at Budapest and in 1843 appeared in concert at Leipzig, where he remained to study music several years. In 1849 he entered upon important engagements to appear in concert at various courts in Europe, and for several years made annual appearances in London. He was made concert master of the orchestra of Weimar in 1849, where he became associated with Liszt, and in 1868 was made head of the Berlin Academy of Music. As a musician he played with marked tenderness and sincerity, and as a quartette player he has been unrivaled by contemporary violinists. Degrees were conferred upon him by several universities, including Cambridge and Oxford.

JOSEPH JOACHIM.

JOAN OF ARC (jō-ăn′ ŭv ärk), Maid of Orleans, famous French heroine, born in the village of Domremy, now the department of the Vosges, France, Jan. 6, 1412; executed May 30, 1431. She descended from humble parents, secured a very rudimentary education, and learned to spin, sew, and do household duties. The protracted wars between France and England gave her much concern, and the woes of her country inspired her with an ardent desire to render patriotic service. When thirteen years of age, she was impressed with a belief that she was divinely chosen to assist the French dauphin. After solitary meditation, she proceeded to interview the prince, and with pious enthusiasm persuaded those in authority to give credence to the heavenly vision and angelic voices that had led her to activity. After donning male attire and equipping herself with a sword and a sacred banner, she proceeded with Count de Dunois to bring about the deliverance of Orleans. An army of 10,000 men was placed at her disposal, with which she marched from Blois and entered Orleans on April 29, 1429. Her superb leadership and numerous sallies animated and inspired the French with confidence, and, after successive and well-directed attacks, they forced Suffolk to abandon the siege of Orleans on May 8, 1429. Joan at once became the heroine of the French, and the dread of the English. Numerous successes followed at Orleans, and shortly afterward she conducted Charles to Rheims, where he was anointed and crowned king, on July 17, Joan occupying a position of honor at his side.

It was the wish of Joan of Arc that she might return home after this coronation, but, after prolonged persuasions by Charles, she was induced to remain with the army. In the attack on Paris, where the troops were repulsed by Bedford, she received a slight wound, but continued aggressive action until May 25, 1430, when she was taken a prisoner by the Burgundian forces in Compiègne, and sold to the English for $3,200. The latter took her to Rouen, subjected her to a prolonged and shameful trial, and condemned her to death as a sorceress. Shortly afterward the punishment was commuted to perpetual imprisonment, but the English found a pretext to treat her as a relapsed criminal and condemned her to be burned. This terrible fate she suffered May 30, 1431, and her ashes were thrown into the Seine River. A court was constituted by Pope Calixtus III. in 1455, which declared her innocent and pronounced her trial unjust. In French history she occupies a place of honor and in the history of civilization she ranks as a heroine and martyr, her memory being fittingly commemorated in statuary and literature.

JOASH (jō′ăsh), or **Jehoash,** King of Judah, who reigned for forty years, from 836 until 796 B. C. He was a son of Ahaziah by Athaliah. At first he reigned under the regency of his mother. In the beginning he instituted religious reforms, but later reverted to idolatry. He was succeeded by his son Amaziah. Joash, the name of a King of Israel, succeeded his father Jehoahaz in 797 and reigned until 783 B. C. Like his father, he followed Baal worship. As a warrior he is noted for courage and activity.

JOB (jōb), meaning the hated or afflicted, the hero of the Book of Job, which forms a part of the Old Testament. Whether Job was a real personage or the hero of a poem or drama in a similar sense as *Shylock* in Shakespeare was real is a question which scholars are unable to decide and upon which there is a diversity of opinion. Where the Book of Job was written and who wrote it is not known. Some think it antedates the Books of Moses, while others believe Moses himself to be the author, and still others accredit it to Solomon. Whatever its origin, the book or poem seems to be from an enlarged Hebrew thinker, vindicating the divine government of the world. As a gem of literature it ranks with "Faust" and "Hamlet." The Book of Job is a production intended to widen the conception of the providence of God. It sets before men a new view of suffering and trial, in which it was possible for a man like Job to remain true to his trust, and look beyond to another life where God will vindicate such trust. It is represented that Job lived in a region between Palestine and the Euphrates known as the land of Uz, and his life presents a remarkable steadfastness in fidelity to Jehovah through suffering and affliction.

JOB'S TEARS, the name of a grass native to India, grown as a cereal in a manner similar to corn. It is so named from the seeds, which are tearlike, hard, shining globules. The seed is used in India for food. The plant has been naturalized in Canada and the United States as an ornamental grass.

JOEL (jō'el), one of the twelve minor prophets, who delivered his predictions in or about the time of Joash, and after the exile dwelt in the vicinity of Jerusalem.

JOFFRE, Joseph, general born at Rivesaltes, France, in 1852. He studied in his native town and at the École Polytechnique in Paris, where he excelled as a student of military affairs. In 1870 he was an engineer in the Franco-German War, building fortifications at Paris, and subsequently he was professor of fortifications at Fontainebleau. He commanded in Africa in 1893 and in 1911 was made commander-in-chief of the armies of France, in which position he achieved great successes in 1914 and 1915. He came to America in 1917 to aid in securing coöperation among the allied countries, and toured westward as far as Chicago and St. Louis.

JOHANNESBURG (yō-hän'nĕs-bŭrg), the largest city of South Africa, in the Transvaal Colony and in the center of the Witwatersrand gold fields, 35 miles south of Pretoria. It is regularly platted with wide streets, which intersect each other at right angles, and they are generally well improved by grading and pavements. The chief buildings include the stock exchange, the post office, the public library, the city hall, and many business blocks. Much of the architecture is of stone and vitrified brick laid in cement. It has a system of public waterworks, gas and electric lighting, and electric street railways. Among the manufactures are clothing, brick, pottery, tobacco, machinery, leather, soap, packed meat, and jewelry.

Johannesburg was founded by the Boers in 1886. Three railways were opened to it in 1892, giving it communication facilities with Pretoria, Cape Town, Dunbar, Port Elizabeth, and Delagoa Bay. In 1895 the famous Jameson raid was made upon the city, which resulted in the capture of the insurgents, and four of the principal leaders were sentenced to death, but the sentence was afterward commuted to a cash payment of $125,000 each. The fortifications constructed by the Boers long prevented British occupation, but it was captured by Lord Roberts in 1900. About half of the inhabitants are whites. Population, 1921, 257,220.

JOHN, the name of 23 popes, who reigned within the period from 523 to 1417, of whom John VIII. and John XXIII. are the most noteworthy. The former was Pope from 872 to 882. He succeeded Adrian II. and attained remarkable success in overcoming Saracen influences. John XXIII. reigned from 1410 to 1415. He was of noble descent, and became noted because of prolonged controversies regarding papal succession with Gregory XII. and Benedict XIII. See **Pope.**

JOHN, surnamed **Lackland,** King of England, youngest son of Henry II., born in Oxford, England, Dec. 24, 1165; died Oct. 19, 1216. When nineteen years of age, he took charge of the government of Ireland under a lordship, but his weak management caused his recall in 1186. Shortly after he joined his four older brothers against his father, which occasioned much grief to Henry and hastened his death. Henry II. was succeeded by Richard I., but the latter died soon after, and John was crowned King of England at Westminster on May 27, 1199. He promptly seized Arthur, son of Geoffrey, the rightful heir to the English throne, and imprisoned him at Rouen, France, and shortly afterward caused him to be executed privately. The reign of John was one of much military activity. It became distinguished on account of reducing the forces of William of Scotland, suppressing a rebellion in Ireland, and conquering the reigning prince in Wales. Soon after he confiscated the property of the Roman Catholic Church in his dominion, which caused the Pope to depose him in 1212 by issuing a public bull. The Pope commissioned Philip of France to execute the decree, but John finally submitted, when England in a measure became a dependence of the papal see. On June 15, 1215, the army required him to sign the Magna Charta, known as the Great Charter, which became the basis of the constitution of England. Soon after another uprising occurred, in which the Dauphin of France aided the barons, landing in England in May, 1216. The French army occupied the greater part of the country within three months, when English mistrust of the foreigners reacted in favor of John, though he died soon after at Newark as the result of an accident which occurred while marching across the Wash.

JOHN II., King of Poland, second son of Sigismund III., born March 21, 1609; died Sept. 16, 1672. He traveled extensively in the continental countries of Europe. In 1640 he joined the order of Jesuits at Rome, was chosen cardinal shortly afterward, and on Nov. 20, 1648, succeeded his brother to the throne of Poland. His reign was marked by several wars against Russia and Sweden, in which the Polish army was successful and the dominion of the Polish crown was extended by the addition of several provinces. In September, 1668, John abdicated and became an abbot at Nevers, France.

JOHN III., John Sobieski, King of Poland, born in 1624; died June 17, 1696. He and his brother Mark received a liberal education under the direction of their father, John Sobieski, at the city of Cracow, in Galicia. After traveling extensively in France, Germany, Italy, and England, the brothers returned in 1648 to attend the funeral of their father, who had died suddenly. At the Battle of Pilawiecz the Russians defeated the Poles, which induced the brothers to organize an army and battle for the independence of their country. Mark was slain in a decisive battle on the banks of the Bog River, but John was more fortunate and distinguished himself. He rose rapidly in the admiration of his countrymen and became an important factor in military forces. On Nov. 11, 1673, he commanded the Polish forces at Kotzim and defeated the Turks with much slaughter. The following year he was elected King of Poland, securing the crown at Cracow. In 1683 he organized an army of 20,000 which he led against the Turks, who had besieged Vienna, united with the German army, and was successful in driving the Turks from their intrenchments. Unbounded enthusiasm prevailed as he entered Vienna with the banner taken from the Turks, but subsequently he was less successful in warring against the forces of the Ottoman Empire. John III. was a patron of learning, possessed a gentle disposition and agreeable manners, and fostered internal improvements and industrial arts.

JOHN I., known as Joan the Great, King of Portugal, son of Pedro I., born in Lisbon, April 22, 1357; died Aug. 11, 1433. His brother, Ferdinand I., died without male issue in October, 1385, which led to a controversy between him and other claimants, but he was recognized two years later. However, the King of Castile resorted to arms in favor of the infant Princess Beatrice, but at the Battle of Aljubarota, on Aug. 14, 1385, John's army succeeded in securing a decisive victory. In 1415 he commanded in a war against the Moors, which resulted in annexing Ceuta to his dominion. His reign was one of much prudence, ability, and success, and at his death he was succeeded by his son, Edward.

JOHN II., known as John the Perfect, King of Portugal, born in Lisbon, in 1455; died in October, 1495. He succeeded his father, Alfonso V., to the throne of Portugal, Aug. 29, 1481. His reign is distinguished by the curtailment of power among the aristocracy, the execution of the Duke of Braganza, in 1483, and of the Duke Viseu for conspiracy. The expedition of discovery sent out by him under Diaz made him famous. This expedition discovered the Cape of Good Hope. In 1493 he aided in equipping a squadron for exploring the new world discovered by Columbus. The navigators sent out by John II. included Da Gama, who visited India, and others who made extensive explorations on the coast of Africa.

JOHN, Saint, apostle and evangelist, son of Zebedee, fisherman of the Sea of Galilee. He and his brother James were born in Bethsaida, and he followed in his father's occupation until called to be a disciple of Christ. It appears from available history that he attended the preaching of John the Baptist as a disciple at Bethany, and that he there formed the personal acquaintance of our Lord. The four gospels relate the events of his life, from the time he was called as a disciple of Christ until the ascension. After the ascension John witnessed the outpouring of the spirit on the day of Pentecost. He first ministered in Jerusalem and Samaria, and subsequently settled in Ephesus. His testimony to the resurrection given at Jerusalem is among the most prominent of that event, but he again visited the Jewish capital in connection with Paul. The persecutions during the reign of Emperor Domitian caused him to seek safety on the Isle of Patmos, where he witnessed the visions narrated in the Book of Revelation. He returned to Ephesus in the reign of Nero and probably died there in 58 A. D. His death is distinguished from the demise of the other disciples in that they all suffered martyrdom, he alone dying from natural causes. John possessed affection and tenderness of nature, and was characterized as "the disciple whom Jesus loved." When dying, he uttered, "Little children, love one another." His writings include the Book of Revelation, the gospel that bears his name, and three epistles, though some think he was assisted by others in writing at least a portion of the last mentioned.

JOHN DORY, the English name of a fish native to the warm seas of the Eastern Hemisphere. A species common to the Mediterranean is prized as a food fish. It is about twenty inches long and has bony jaws fitted for the passage of large objects taken in as food. It is rather sluggish and inactive, except when in pursuit of other fish, upon which it feeds. The body is covered with spinous scales and has an olive-brown tail, marked by a large circular brownish spot on each side. According to legends, this fish was caught by Saint Peter in the Lake of Gennesaret, the marks being the impression of his thumb and finger. Several other species occur in the tropical seas, all of which have a compressed body, with a protruding under jaw.

JOHN FREDERICK, Elector of Saxony, son of John the Constant, born in Torgau, Germany, June 30, 1503; died March 3, 1554. He succeeded his father as elector and distinguished himself as an advocate of the Reformation to which he rendered material aid by commanding the Protestant army against Charles V. At the Battle of Mühlburg he was taken prisoner and there was condemned by court-martial, but later was liberated through the efforts of Maurice of Saxony.

JOHN GEORGE I., Elector of Saxony, successor to his brother, Christian II., born March 5, 1585; died Oct. 8, 1656. In 1611 he succeeded to the electorship. He aided the Protestant cause by heartily coöperating with the German princes and by furnishing valuable supplies for subsistence and defense. In 1631 he formed an alliance with Gustavus Adolphus of Sweden and captured Prague, but later engaged in a war against Sweden and was defeated at Wittstock. In 1643 he aided the imperialists against France.

JOHN OF AUSTRIA, Don, son of Emperor Charles V. and Barbara Blomberg, born in Ratisbon, Germany, Feb. 24, 1545; died Oct. 1, 1578. He was brought up chiefly at the Castle Villagarcia, near Valladolid, in Spain, received a liberal education, and was provided for by his father settling a handsome income upon him out of the revenues of Naples. Philip II., his half-brother, recognized him as a member of the royal family in 1559, and he was given an education in connection with the Infant Don Carlos and Prince Garma. Philip intended Don John for the church, but the latter preferred a military life, and in 1570 he secured a command in an expedition against the Moors, who had rebelled in Granada. In August he occupied the entire region of the Alpujarras Mountains and distinguished himself otherwise by courageous conduct, which caused him to be promoted in military rank. In 1571 he defeated the Turks in the famous Battle of Lepanto, a decisive struggle between the West and the East. The brilliant success he won in this engagement inspired the Christians with ecstatic joy. His brother soon after appointed him viceroy of the Netherlands, in which position he made radical changes in military discipline and promoted interior improvements. New honors were gained by him in 1577 by defeating William of Orange. He actually caused Philip to fear that he would take advantage of his popularity and influence by making himself king over many of the Spanish possessions. He died suddenly, perhaps of poison, at Namur, Belgium.

JOHN OF GAUNT, fourth son of Edward III. and his queen, Philippa, born at Ghent, Belgium, June 24, 1340; died Feb. 3, 1399. Edward II. made him Duke of Lancaster. He served in the war against France and afterward became governor of Guienne, France. He married Constance, daughter of Peter the Cruel, King of Castile, in 1370, and in the right of his wife claimed the throne. To assert his rights he invaded the kingdom, but afterward relinquished them in favor of his son-in-law, Prince Henry of Castile. Bolingbroke, eldest son of John of Gaunt, became King of England as Henry IV.

JOHNS HOPKINS UNIVERSITY, an institution of higher learning at Baltimore, Md., founded by Johns Hopkins, who bequeathed the sum of $3,500,000 for this purpose. The university was incorporated in 1867, six years before the death of the founder, and the first president, Daniel C. Gilman, was inaugurated in 1876. Graduate and collegiate courses were first offered and in 1893 a medical department, to which only college graduates were admitted, was opened. President Gilman retired from office in 1901, when Ira Remsen, the professor of chemistry, was elected president.

The buildings of the department of philosophy and the arts are situated not far from the center of the city and include a central building; laboratories for zoölogy and botany, chemistry, geology and mineralogy, and physics; a gymnasium; and a Christian Association building. A beautiful site of 125 acres was given to the university in 1902, when the permanent endowment was increased by the sum of one million dollars contributed by friends and the alumni. The buildings of the medical department adjoin the Johns Hopkins Hospital, with which it is closely affiliated and upon which it is dependent for its clinical advantages. The funds of the university amount to about $17,500,000, the grounds and buildings are valued at $3,750,000, and the library and scientific apparatus have a value of $390,000. About 255,000 bound volumes and many pamphlets are contained in the library.

Instruction is given in mathematics, physics and astronomy, chemistry, geology and mineralogy, zoölogy and botany, Greek, Latin, Sanskrit and comparative philology, Semitic language, English language and literature, German and Germanic philology, Romance languages, history, political economy, political sciences, philosophy and psychology. Instruction is given in all the branches of medicine and surgery. The three degrees offered are Bachelor of Arts, Doctor of Philosophy, and Doctor of Medicine. Twenty-two fellowships and 91 scholarships are offered to students of ability and promise. About a dozen journals are issued regularly from the Johns Hopkins Press. The faculty consists of 496 instructors and the enrollment is about 4,100 students.

JOHN THE BAPTIST, the last of the prophets, forerunner of Christ, son of the priest Zacharias and Elizabeth. His birth, which was foretold, occurred about six months before that of Christ. He was a cousin of the mother of our Lord and flourished in the time of Christ. The circumstance of his birth and numerous incidents of his life are related in the New Testament. Much of his life was devoted to the work of preparing the people for the coming of the Messiah. He baptized Christ and many others in the Jordan, was imprisoned by Herod Antipas, tetrarch of Galilee, and later was beheaded to please the wife of the latter. The followers of John and those claiming to be his disciples flourished long after the spread of Christianity, while the Zabians still survive in Eastern countries. The latter claim direct descent from his early followers. June 24th is set apart as the day of John the Baptist.

JOHNSON (jŏn′sŭn), **Andrew,** seventeenth President of the United States, born in Raleigh, N. C., Dec. 29, 1808; died July 31, 1875. His father, Jacob Johnson, died from injuries received while rescuing a person from drowning, when Andrew was four years old. Since his parents were very poor, his early education was entirely neglected. He learned the alphabet from a fellow-workman, while apprenticed to a tailor, at the age of ten years, and succeeded in borrowing a book from which he learned to read. In 1824 he removed to South Carolina, where he worked as a journeyman tailor, and in 1826 settled at Greeneville, Tenn., where he married Eliza McCardle, a woman of refinement, who taught him evenings to write and instructed him in the elements of arithmetic while at work during the day.

ANDREW JOHNSON.

His remarkable natural tact and ambition to learn enabled him to make material advancement, and he soon became a political leader. An organized party of workmen elected him alderman in 1828, and in 1830 he was elected mayor, which office he held three years. In 1831 he was made trustee of Rhea Academy, and aided in organizing a literary society at Greeneville College. He represented Greene and Washington counties in the Legislature in 1835, was reëlected in 1839, and the following year made a state reputation by his force of oratory in advocating the election of Martin Van Buren. In 1841 he was elected to the State senate from Greene and Hawkins counties, widened his influence by efficient service and the advocacy of progressive legislation, and in 1843 was elected to Congress as a Democrat.

In Congress he supported the annexation of Texas and the resolution to restore to General Jackson the fine imposed upon him at New Orleans. He was elected Governor of Tennessee in 1853 and was reëlected two years later. In 1857 he became a member of the United States Senate. The Kansas-Nebraska bill received his support, but he opposed the Union Pacific railroad grant, favored the homestead law, and opposed all schemes directed to disorganize the Union. He held his seat in the Senate until President Lincoln appointed him Military Governor of Tennessee, in 1862, in which capacity he rendered valuable service to the Federal cause. In 1864 he was elected Vice President on the ticket with President Lincoln. On April 15, 1865, Johnson succeeded Lincoln as President, the latter having been assassinated the day before.

The administration of President Johnson is memorable in history on account of the prolonged contest between him and Congress on the reconstruction policy and the readmission of the seceded states. The first breach was the veto, in 1866, of the Freedmen's Bureau bill, which was designed to protect the Negroes, and this was followed by the veto of the civil service bill, a bill for the congressional plan of reconstruction, and the tenure-of-office bill in 1867. In 1866 he suspended and then removed Secretary Stanton, and was forthwith impeached by the House of Representatives. The trial by the Senate took place from March to May, 1868, and resulted in his acquittal, his opponents having one less than the necessary two-thirds vote. In 1869 President Johnson temporarily retired to private life, but was again elected United States Senator in 1875, and held his seat at the extra session of that year. His death occurred while visiting his daughter near Elizabethton, Tenn., and the remains were interred at Greeneville.

JOHNSON, Eastman, artist, born in Lovell, Me., July 29, 1824; died April 5, 1906. He became devoted to art work in 1841, studied ten years in Düsseldorf, Germany. His best paintings include "Corn Husking Bee," "The Old Kentucky Home," "The Boyhood of Abraham Lincoln," and "The School of Philosophy at Nantucket."

JOHNSON, E. Pauline, poetess, born on the Grand River Reserve, in Ontario, in 1862. She was the daughter of George Henry M. Johnson, head chief of the Mohawk Indians, and Emily S. Howells, a native of Bristol, England. Her early education was obtained at Chiefwood and at the Brantford Model School, where she was instructed by private tutors. She went to England in 1894, where she published a volume of poems entitled "The White Wampum." This work, as well as others issued by her, gained much favor in England and America. Her home was chiefly in Winnipeg, Man., but she traveled extensively. She died March 7, 1913.

JOHNSON, Hiram Warren, public man, born in Sacramento, California, in 1866. He studied at the University of California and was admitted to the bar. In 1910 he was elected Governor, became a Progressive Republican and was nominated for Vice-President on the ticket with President Roosevelt, in 1912. He was again elected Governor in 1914, receiving a large plurality. In 1916 he was elected United States Senator and was re-elected in 1922.

JOHNSON, Herschel Vespasian, statesman and jurist, born in Burke County, Georgia, Sept. 12, 1812; died Aug. 16, 1880. He was elected Governor of Georgia in 1853, serving four years, and in 1860 was nominated as a candidate for Vice President with Stephen A. Douglas. Though an opponent of the policy of secession, he cast his fortunes with the Confederacy, and was a member of the Senate of the Confederate States. In 1866 he was elected to the United States Senate, but was not permitted to serve because of his connection with the rebellion. In 1873, after the removal of disabilities, he was made judge of the superior court of his State.

JOHNSON, Sir John, public man, son of Sir William Johnson, born near Johnstown, N. Y., Nov. 5, 1742; died Jan. 4, 1830. He studied at Albany and at New York, and rendered valued service in the French and Indian War. In 1765 he was knighted and nine years later succeeded to the great estate of his father in the Mohawk Valley. When the American colonies adopted the Declaration of Independence, he fled to Canada with 700 Tory sympathizers and organized a force known as the Royal Greens, or the Queen's Own American Regiment. In 1777 he occupied Fort Stanwix and defeated General Herkimer at Oriskany, and subsequently aided in organizing the raids conducted by Joseph Brant and others, which resulted in the massacres of the Wyoming and Cherry valleys. General Sullivan with a force of 5,000 Americans defeated him at Newtown (now Elmira) in 1879, and he withdrew to Montreal. His estates were confiscated at the close of the war, but several grants of land in Canada were made to him by the British Government.

JOHNSON, John A., public man, born at Saint Peter, Minn., July 28, 1861; died Sept. 21, 1909. His parents were natives of Sweden. He studied in the public schools and supported his mother after reaching the age of twelve years. For some time he was employed in the office of the Saint Peter *Herald,* of which he eventually became the editor. For seven years he was a member of the Minnesota National Guard, becoming its captain, and for a number of years served as a State Senator. In 1904 he was elected Governor of Minnesota as a Democrat, although the State gave a large plurality to President Roosevelt, and was reëlected in 1906 and in 1908. He became prominent as an advocate of tariff revision, the regulation of railroads, and the extension of greater rights and privileges under the Federal constitution to the Filipinos. He became widely known as a lecturer.

JOHN A. JOHNSON.

JOHNSON, Reverdy, statesman, born in Annapolis, Md., May 21, 1796; died Feb. 10, 1876. He studied at Saint John's College, completed a law course, and in 1815 was admitted to the bar. He settled in Baltimore in 1817 to practice his profession, was elected a member of the State senate in 1821, and became a member of the United States Senate in 1845. President Taylor appointed him Attorney-General in 1849, and in 1863 he was again elected to the United States Senate. In 1868 he became minister to England, where he negotiated the Johnson-Clarendon treaty. This treaty was rejected by the Senate, but the objects intended to be secured by it were later adjusted in the settlement of the Alabama Claims. He returned to the United States in 1869, resumed the practice of law, and continued to manifest profound thought and marked prudence in adjusting and treating law questions.

JOHNSON, Richard Mentor, Vice President of the United States, born at Bryant Station, Ky., Oct. 17, 1780; died Nov. 19, 1850. He studied at Transylvania University, was admitted to the bar in Kentucky, and served in the Legislature from 1804 to 1807. In 1807-19 he was a Republican-Democratic member of Congress, rendered efficient service in the War of 1812, and served as United States Senator from 1819 to 1829, when he was again elected Representative, serving until 1837. The Senate chose him Vice President of the United States in 1837, and he served in the office during the Presidency of Martin Van Buren. After retiring from the Vice Presidency he was elected to the State Legislature of Kentucky, and served in that capacity until his death. As a statesman he was noted for his honorable and extended legislative career. He enjoyed a large circle of friends because of his pleasant manners and kind disposition.

JOHNSON, Rossiter, editor and author, born in Rochester, N. Y., Jan. 27, 1840. In 1863 he graduated at the University of Rochester. The following year he became editor of the Rochester *Democrat,* a Republican newspaper, and subsequently edited the *Statesman* at Concord, N. H. He was associate editor of the "American Cyclopaedia" in 1873-77, and was managing editor of the "Cyclopaedia of American Biography" in 1886-88. In 1876 he edited "British Poets," and in 1891-94 served on the editorial staff of the "Standard Dictionary." His publications include "Idler and Poet," "A History of the French War," "A History of the War Between the United States and Great Britain," and "A History of the War of Secession." His "Phaeton Rogers" is a work in fiction.

JOHNSON, Samuel, eminent author, born in Lichfield, England, Sept. 18, 1709; died Dec. 13, 1784. He was the son of Michael Johnson, a magistrate of Lichfield, received his early education in his native town, and in 1829 attended Pembroke College, Oxford. While a student at that college he was oppressed by debts and various difficulties, which preyed on his melancholy spirit, while poverty prevented him from securing his degree. Subsequently he engaged in school teaching, but failed on account of being illy adapted to the art of school government and the instruction of youth. After leaving the schoolroom, he supported himself by making translations for the press and working for booksellers at Birmingham. He married Mrs. Potter in 1736, and through her secured property interests valued at about $4,000. After studying special branches with ill success, he repaired to London and became a contributor to the *Gentleman's Magazine*.

The first poem published by Johnson, in 1738, entitled "London," was mentioned favorably by Pope and other men of standing, though his remuneration was very small for the work he produced. In the meantime he completed a tragedy under the title of "Irene," which he had commenced before he removed to London. He worked from 1747 to 1755 on his dictionary, which he made a valuable aid in reference and study, and by it became the founder of English lexicography. After this he was more successful and became recognized as an important factor in English literature. Shortly afterward he was granted a pension of $1,500 per year. Johnson possessed keen ability to observe character, caustic wit, and remarkable aptitude to treat moral themes with sage solemnity. His deficiency as an abstract thinker and inventor forbade his becoming either a poet or a philosopher, but his keen intellect and common sense appealed to the mass of people and rendered his productions practical and utilitarian. Among his writings not named above are "Life of Richard Savage," "Vanity of Human Wishes," "Rasselas," "The Rambler," "Lives of the Poets," and "Journey of the Western Isles."

JOHNSON, Thomas, statesman, born at Saint Leonards, Md., in 1732; died in 1819. He studied law at Annapolis, and served as a member of the first Continental Congress, where he moved the appointment of George Washington as commander in chief. In 1776 he was made brigadier general to coöperate with Washington. The following year he was elected Governor of Maryland, and throughout the war took a prominent part in the public affairs of that State. He supported the Federal Constitution in the Maryland convention which ratified it in 1789. Two years later he was made an associate judge of the United States Supreme Court, and subsequently served as a member of the commission which laid out the city of Washington, D. C.

JOHNSON, Thomas Loftin, public man, born in Georgetown, Ky., July 18, 1854. He removed to Indiana at an early age, and subsequently was clerk in a street railway office at Lewisville, Ky. He invented several railway devices that brought large financial returns, which enabled him to purchase extensive interests in the street railways at Indianapolis, Detroit, and Cleveland. In 1891 he was elected to Congress as a Democrat, serving four years, and on the floor of the House became prominent as an advocate of the single-tax theories of Henry George. He was elected mayor of Cleveland, Ohio, in 1901, and was reëlected to that position a number of times. He was prominent as an advocate of the three-cent street railway fare movement in Cleveland, which rate was adopted in that city in 1908, but it was not applied successfully in all parts of the municipality. He died April 10, 1911.

JOHNSON, Sir William, colonist and general, born in Warrentown, Ireland, in 1715; died in Johnstown, N. Y., July 11, 1774. It was designed that he should pursue a mercantile career, but in 1738 he engaged with his uncle, Sir Peter Warren, to manage a large tract of land on the Mohawk River, New York. He commenced to colonize the land and to promote trade with the Iroquois Indians, in both of which he was successful. By direct intercourse with the Mohawk tribe he learned their language, and was made a sachem by election. His ability as an administrator was recognized by Governor Clinton, who appointed him Indian commissioner for New York. At the time of the French and Indian War he was given a baronetcy and a cash fund of $15,000, this being in recognition of his success against General Dieskau in the Battle of Lake George on Sept. 5, 1755. Later he was made superintendent of the Six Nations with a salary of $3,000, in which position he rendered such valuable service to the British cause that the king granted him a royal patent for 100,000 acres of land north of the Mohawk River. On this tract of land he established Johnstown, in Tyrone County. Later he secured a treaty with the Iroquois Indians, by which the frontier was extended westward to include Kentucky with Virginia as a British possession.

JOHNSTON (jŏn'stŭn), **Albert Sidney,** Confederate general, born in Kentucky, Feb. 3, 1803; slain April 6, 1862. He graduated from West Point in 1826, and served with distinction in the Black Hawk War. Soon after he entered the army of the Republic of Texas, of which country he subsequently became Secretary of War. He served during the Mexican War as inspector general on the staff of Gen. W. O. Butler, and when peace was secured became a planter. Shortly afterward he entered the United States army and rose to be paymaster and colonel. When the Civil War commenced he espoused the Confederate cause, and became brigadier general in command of the western forces. Soon after he fortified the strategic points of Bowling Green, and made an attack with 50,000 men on General Grant at Shiloh, April 6, 1862. The attack was one of the fiercest in the Civil War, and General Johnston was killed on the afternoon of the first day, while leading a charge. He ranked as an able general, not only among the Confederates, but among the military men of America. The oft-expressed view that he was a brother of J. E. Johnston is erroneous.

JOHNSTON, Joseph Eggleston, Confeder-

JOSEPH E. JOHNSTON.

ate general, born in Longwood, Va., Feb. 3, 1807; died March 21, 1891. He descended from a family of Revolutionary fame, his mother being a niece of Patrick Henry. In 1829 he graduated at West Point, and served in the Seminole War and the war with Mexico, in the latter chiefly as topographical engineer. He held the rank of brigadier general at the outbreak of the Civil War, but resigned his commission, April 22, 1861, and entered the Confederate service as major general of volunteers. Two weeks later he was commissioned brigadier general and given command of a force in the Shenandoah valley, and on July 2, 1861, reinforced Beauregard at Bull Run. In 1862 he was severely wounded at the Battle of Fair Oaks, near Richmond, and the next year was assigned to the command of the Confederate forces in the Southwest with the rank of general, when he made an effort to relieve Vicksburg. The following year he commanded a force to intercept Sherman's march to the sea, but was compelled to fall back from point to point until President Davis appointed General Hood to supersede him in the command. General Lee placed him in command of all the forces of South Carolina, Georgia, Florida, and Tennessee, in 1865, with instruction to drive Sherman back, but he was unable to check the march on account of having a smaller army than his opponent. Soon after the news of Lee's surrender reached him, he capitulated to Sherman at Durham's Station. After the close of the war he engaged in commercial and railroad enterprises and was elected to Congress in 1877. President Cleveland appointed him commissioner of railroads in 1885, which position he retained until his death. Johnston was a man of extended culture and ability. He was the highest in rank of the officers that left the Union army to support the Confederacy, but his plan of campaigning was not in entire accord with the views of President Davis, who assigned him fourth in command of the Southern forces, though Johnston protested for a higher classification.

JOHNSTON, Mary, novelist, born at Buchanan, Va., Nov. 21, 1870. She was educated by private tutors at home, and at an early age gave evidence of having much ability as a writer. In 1898 she published her novel entitled "Prisoners of Hope," which details the colonial life of Virginia in an interesting style. The next year she issued "To Have and to Hold," a romance written on the same theme. A third work of a similar character, entitled "Audrey," appeared in 1902. All of her writings have been widely read and a number of them have been dramatized.

JOHNSTOWN, a city of New York, county seat of Fulton County, forty miles northwest of Albany. It is on Cayadutta Creek and the Fonda, Johnstown and Gloversville Railroad. The chief buildings include the Carnegie public library, the county courthouse, the public prison, and the high school. Among the manufactures are gloves, shoe leather, cigars, machinery, and knit goods. Gas and electric lighting, pavements, street railways, and waterworks are among the municipal facilities. It has a large and growing trade. The region was settled in 1760 under the direction of Sir William Johnson, after whom the place was named. It was chartered as a city in 1895. Population, 1905, 9,845; in 1925, 10,712.

JOHNSTOWN, a city of Cambria County, Pennsylvania, at the confluence of Stony Creek and the Conemaugh River, forty miles southwest of Altoona. It is on the Pennsylvania and the Baltimore and Ohio railroads, and is surrounded by a country rich in coal, fire clay, and iron deposits. Among the noteworthy buildings are the public library, the high school, the city hall, and the Conemaugh Valley Memorial Hospital. Grand View Cemetery is a fine burial ground. The manufactures include iron plate, brick, cement, furniture, pottery, and hardware. It has street railways, waterworks, pavements, gas and electric lights, and other improvements. Johnstown was settled about 1790. The city was almost totally destroyed May 31, 1889, by the bursting of a dam in the Conemaugh River, which formed Conemaugh Lake above. The total loss of life was 2,205 persons and 99 entire families were lost. Contributions sent for the relief of the sufferers amounted to $4,116,801.58. However, the city soon recovered from this calamity and developed rapidly in trade and wealth. Population, 1900, 35,936; in 1920, 67,327.

JOHORE (jō-hōr′), an independent state in the southern part of the Malay Peninsula. It comprises an area of 8,980 square miles. The larger part is covered with a dense growth of primitive forests. Timber, gambier, rattans, fruits, and black pepper are the chief products. The soil is fertile and well adapted to the cultivation of cereals, sugar cane, tobacco, and the coffee tree, but comparatively little advancement has been made in agricultural arts. Johore Barhru, the capital, is a small town located a short distance northeast of Singapore. In 1885 the British concluded a treaty to control the foreign affairs. The country is populated chiefly by Malays and Chinese. Population, 1922, 195,506.

JOINT, in anatomy, a connection between the bones and cartilagenous formations of the skeleton. The joints permit the movements of the animal frame, contribute to the strength of the skeleton, especially of the back and the lower limbs, and give form and shape to the body.

They are either *movable* or *immovable*. The former embrace such as the joints of the hip, shoulder, and ankle, and the latter include the frontal and parietal bones. The end of one bone in a joint is usually convex, that of its companion bone is concave, and both ends are covered by a thin layer of elastic cartilage. This cartilage has a highly polished surface and serves to facilitate motion and to deaden shock. The moveable joints are usually divided into planiform, hinge, and ball and socket joints.

In the *planiform joints* the surfaces are more or less plane, permitting a gliding movement, as in the tarsal and metatarsal articulations of the foot. They permit only a limited motion, but impart elasticity and slight flexibility. The *hinge joints,* which permit motion in two directions, are provided with very strong ligaments on the sides, as in the elbow, ankle, and finger. In the joints of the ankle and the fingers the tendons of certain muscles replace the ligament. In the *ball and socket joint* there is a cuplike cavity in one of the bones, into which a headlike extremity of the other bone is fitted, the latter being held in place by a membranous capsule. This class of joints permits great freedom of motion in all directions, as in the joints of the hip and the shoulder. The socket in the latter is not as deep as that of the hip, hence there is greater freedom of motion, but the joint is more easily dislocated. A secretion called *synovia* is supplied by a thin membrane that surrounds the joints, serving to moisten and salubricate them.

JOINT-FIRS, the common name of several species of small trees and shrubs closely related to the coniferous plants. A number of these are native to the southwestern part of North America, and others are found in the warmer parts of Asia and Europe. They are so named from their jointed stems. The juices are not resinous, but are watery or somewhat gummy.

JOINTS, in geology, the fissures of a peculiar kind that divide rock masses. They usually occur in parallel lines of a system of clefts. Joints are due either to the passage of earthquake waves or faults resulting from strains by the forces that elevate the surface. They differ from dividing surfaces of strata in that the texture is the same on both sides of the dividing line, and from cleavage by the fact that the blocks are thicker and that they have little or no tendency to split in the same direction. Joints are designated as *strike, dip,* and *diagonal joints,* depending upon whether they run parallel to the strike or to the dip, or extend diagonally across either of these.

JOINT-STOCK COMPANY, the name usually employed to designate a partnership in which the capital is distributed among a number of partners. They assume in certain respects a corporate form, but possess legally none of the peculiar attributes or powers of corporations. Joint-stock companies are either limited or unlimited, and they may become incorporated under the law by complying with its requirements. A *limited* company is one of two forms, in one of which each member is limited to the amount unpaid on the shares that he stipulated to purchase, and in the other the liability of each member is limited to the amount he agrees to contribute to the assets should the business of the company be discontinued. In an *unlimited* company the liability of the members has no legal limit. The word *limited* must be added to the name of the company, in case the liability is to be restricted, which serves to give notice to the public of the character of the organization. In addition there must be a record kept by the company to show the place of business, the amount of capital, the limit or the amount of guarantee, and the object for which the association of individuals is established.

JOINVILLE (zhwăn-vēl′), **François Ferdinand d'Orléans, Prince de,** noted soldier, third son of King Louis Philippe, born in Neuilly, France, Oct. 14, 1818; died June 16, 1900. After studying in the College of Henry IV., he took a course of instruction in the naval school of Brest. He became a lieutenant in the French navy in 1836, four years later commanded the frigate which brought the remains of Napoleon from Saint Helena to France, and in 1843 married the daughter of Dom Pedro I., Emperor of Brazil. In 1844 he commanded the fleet engaged in the interest of France against Morocco, and was made vice admiral for distinguished services. He removed to America in 1861, and, together with his two nephews, served in the Civil War under McClellan. He lived in retirement in France after 1871, though he served for a brief period in the French national assembly, and later published several books relating to military subjects.

JOKAI (yō′kŏ-ē), **Maurus,** novelist, born at Komorn, Hungary, Feb. 19, 1825; died May 5, 1904. He studied in Budapest and began the practice of law, but soon engaged in literary work. He took a part in the uprising against Austria in 1848, and after the restoration of the union between that country and Hungary he was elected to the Hungarian Chamber. In 1863 he began the publication of *Fatherland,* in which he published many of his novels. His "The Jew Boy," issued in 1842, was his first drama, and his "Working Days," his first novel, was widely read. Other publications include "Black Diamonds," "A Hungarian Nabob," "The Romance of the Next Century," "History of Hungary," and "Transylvania's Golden Age."

JOLIET (jō′lĭ-ĕt), a city in Illinois, county seat of Will County, on the Des Plaines River, forty miles southwest of Chicago. It is on the Atchison, Topeka and Santa Fé, the Chicago and Alton, the Michigan Central, the Chicago, Rock Island and Pacific, and other railroads, and on the Illinois and Michigan Canal. The surrounding country is a fertile agricultural and dairying district, which also produces an excellent quality of Silurian limestone and bituminous coal. Among the noteworthy buildings are the post office, the county courthouse, the public library, the township high school, the State penitentiary, the workingmen's clubhouse, and Saint Francis and Saint Mary academies. It has manufactures of flour, lime, shoes, matches, pottery, farming utensils, tombstones, cigars, bridges, furniture, and Bessemer steel. Among the general facilities are electric street railways, sewerage, waterworks, and pavements. The place was settled in 1831 and incorporated in 1852. Population, 1900, 29,353; in 1920, 38,406.

JOLIET (zhô-lyå'), **Louis,** noted explorer, born in Quebec, Canada, Sept. 21, 1645; died in May, 1700. He was educated at the Jesuits' College of Quebec with a view of entering the priesthood, but decided to become an explorer and trader. Soon after he spent a number of years as a trader among the Indians and thereby acquired the use of their language. In the meantime he learned much of the geography of what was then considered the West. In 1672 he was selected by Governor Frontenac to explore the Mississippi River. He was joined in this enterprise by Father Marquette and six others, and by Dec. 8, 1672, had proceeded as far as Mackinac. Through information secured from the Indians they outlined a map of their proposed route. They ascended the Fox River from Green Bay, then descended the Wisconsin River, and entered the Mississippi on June 17, 1673. After floating down the river below the mouths of the Ohio and the Missouri and visiting several Indian villages, they became assured that the river flows into the Gulf of Mexico, and proceeded on their return journey. In September they reached Winnipeg, where they wintered at the mission of Saint Francis Xavier, and returned to Quebec in 1674. The maps and papers prepared by Joliet were lost by his canoe upsetting in the Saint Lawrence River. However, this misfortune was overcome, as the notes prepared by Marquette furnished ample data. In 1680 Joliet secured a grant of Anticosti Island, where the British destroyed a fort built by him and took his wife prisoner. Subsequently he explored Labrador, and was granted the seigniory of Joliet Island, near Quebec.

JOLIETTE (zhō-lyĕt'), a city of Quebec, capital of Joliette County, 42 miles east of Montreal. It is connected with the Saint Lawrence River by a railway of twelve miles and is on the Canadian Pacific Railroad. The manufactures include leather, lumber products, and machinery. It has a hospital, a college, waterworks, and electric lighting. Limestone quarries are worked near the L'Assomption River, on which the town is located. Population, 1921, 9,113.

JOMINI (zhô-mê-nē'), **Henri, Baron,** historian and soldier, born in Payerne, Switzerland, March 6, 1779; died in Passy, France, March 24, 1869. He showed early preference for military activities, was appointed secretary of war in 1798, and in 1801 became aid-de-camp to Marshal Ney. He began to publish treatises on military tactics in 1804, and the following year presented several publications to Napoleon on the field of Austerlitz, by which he secured the warm friendship of that military genius. He accompanied Napoleon at the Battle of Jena, was later created a baron, and in 1808 took an efficient part in the Spanish campaign. Subsequently he rendered valuable aid to Napoleon during the retreat from Moscow, and later at the Battle of Bautzen, but, after Napoleon's second campaign against the Russians, he joined the allied forces against Napoleon and gave them the benefits of his extensive military experience. In 1814 he entered the Russian army, aided in the capture of Varna from the Turks in 1828, and in 1855 settled at Brussels. His writings on military tactics and history are important and voluminous productions.

JOMMELLI (yô-mĕl'lê), **Nicolò,** composer, born at Naples, Italy, Sept. 10, 1714; died Aug. 28, 1774. He studied music in his native city and in Rome. In 1737 he visited Vienna, where he studied and composed musical works a number of years. He was made chapel-master to the Duke of Württemburg in 1754, but in 1767 returned to Naples, where he continued to produce works of much merit, although several audiences hissed some of his music for being largely in a foreign style. His chief compositions include "Didone" and "Armida."

JONAH (jō'nah), a Hebrew prophet. He resided at Gath-Hepher, in Galilee, and was a son of Amittai. He flourished in the latter part of the 8th century B. C., during the reign of Jeroboam II. The history of Jonah is recounted in the Book of Jonah. Ernst Friedrich Rosenmüller (1768-1835), the German orientalist, and other critics urge that the Book of Jonah is an allegory founded on the Phoenician myth of Hercules rescuing Hesione from the sea monster by jumping into its jaws and tearing its entrails. The design of the history is to show that God will not permit his merciful intentions to be frustrated by the disobedience even of a prophet. Orthodox theologians preclude the possibility of this theory and prove that it is strictly historical by the language of Christ (Matt. xii., 39), and the manner in which it is mentioned by Josephus and the Apocrypha. At Nebi-Yunus, near Mosul, is a tomb still shown as that of the prophet Jonah.

JONATHAN (jŏn'à-thąn), a son of King Saul, an heir to the Jewish throne, and the friend of David. His character is a very admirable one. Having early formed a friendship for David, he remained faithful through all the jealousy and hatred with which his father sought David's destruction, and even when he knew that David was anointed to take the kingly crown that rightfully belonged to him. The "love of David and Jonathan" is proverbial. Saul, Jonathan, and two brothers of the latter were killed in a battle with the Philistines on Mount Gilboa.

JONES, Inigo, architect, born in London, England, in 1573; died July 5, 1652. He traveled in France, Germany, and Italy, where he studied the recent and classic architecture of those countries. In 1604 he was appointed by Christian IV. of Denmark to be his architect, and under his direction designed a number of large buildings, including the royal palace at Rosenborg. Later he returned to England, where he revived interest in classical architecture, and was made the court architect under Charles I. He designed the banqueting house at Whitehall, a palace at Greenwich, and the portico of Saint Paul's Church.

JONES, James Kimbrough, soldier and statesman, born in Marshall County, Mississippi, Sept. 29, 1839; died June 1, 1908. He enlisted as a Confederate soldier in the Civil War, began to practice law in 1873, and the same year became a member of the State senate of Arkansas. After serving efficiently in that capacity, promulgating progressive views relative to education and industrial interests, he was elected to Congress in 1880, and was reëlected in 1882 and in 1884. Before the end of the last term in the House, he was elected to the United States Senate, taking his seat in 1885, and was reëlected in 1890 and again in 1896. His legislative career was one of marked influence and led to his selection as the chairman of the Democratic national committee in 1896. In that capacity he served a number of years and proved an efficient organizer in the interest of bimetallism, civil service reform, and international commerce, especially in the presidential campaign of 1900.

JONES, Jenkin Lloyd, clergyman and author, born in Cardiganshire, Wales, Nov. 14, 1843. His parents brought him to Wisconsin in infancy. He served in a Wisconsin regiment the greater part of the Civil War, and at its close studied theology at Meadville, Pa. In 1874 he became a Unitarian clergyman at Janesville, Wis., and afterward had an important charge in Chicago. His congregation was merged with several religious and educational organizations into the Abraham Lincoln Center, Chicago, an institutional church of that city. He lectured in the interest of the extension course of the University of Chicago and promoted the organization of the Congress of Religions in 1893. For many years he served successfully as editor of *Unity*, a journal devoted to religion. Among his publications are "Word of the Spirit," "The Seven Great Religions," "A Chorus of Faith," "Bits of Wayside Gospel," and "The Faith That Makes Faithful."

JONES, John Paul, naval commander, born at Arbigland, Scotland, July 6, 1747; died July 18, 1792. His real name was John Paul, but he afterward called himself "Jones." He descended from a line of respectable ancestors, became a sailor in the merchant marine, and settled in Virginia shortly before the Revolutionary War. He volunteered his services in the interest of American independence shortly after the opening of hostilities, was appointed first lieutenant, and made a number of successful cruises. In 1777 he sailed to France, where he established headquarters at Brest and conducted a remarkable expedition to the British coast in his ship, the *Ranger*, being greatly aided by his special knowledge obtained from his former residence in Scotland. He took several prizes in Saint George's Channel in 1779, shortly after captured the British vessel *Drake*, and with his own vessel, the *Bon Homme Richard*, made a daring cruise along the eastern shore. Off Scarborough he encountered several British ships of war, and fought one of the fiercest naval battles on record on the evening of Sept. 23, 1779, in which he destroyed the *Serapis*. Congress voted thanks to Jones and Louis XVI. presented him a gold sword. In 1788 Catharine, Empress of Russia, engaged him as rear admiral in the war against Turkey, his successes on the Black Sea proving a source of much benefit to the Russians. Later he settled at Paris, where his death occurred. His remains were brought to the United States in 1905 and buried at Annapolis, Md.

JOHN PAUL JONES.

JONES, Lewis Henry, educator, born in Noblesville, Ind., July 3, 1844. He studied at Oswego Normal School and De Pauw University, and in 1874 became a teacher in the Indiana State Normal School. Subsequently he was an instructor in the high school at Indianapolis, was made principal of the Indianapolis Normal School in 1876, serving in that position until 1884, when he was elected superintendent of the public schools in Indianapolis. In 1894 he became superintendent of the public schools in Cleveland, Ohio, and in 1902 was made president of the Michigan State Normal School at Ypsilanti. He published a number of reports and educational reviews and is the author of a series of readers.

JONES, Samuel Porter, known as Sam Jones, clergyman, born in Chambers County, Alabama, Oct. 16, 1847; died Oct. 15, 1906. He studied at boarding schools and in 1869 was admitted to the bar. After practicing law for some time, he became somewhat dissipated and lost his health and in 1872 was converted to the Christian religion. He became a clergyman in the Methodist Episcopal Church South, was agent for the North Georgia Orphanage a term of years, and spent much of his life in lecturing and doing evangelistic work. As a pulpit orator he attained a wide reputation, and was popular as a temperance and Chautauqua lecturer. His writings include "Music Hall Sermons," "Sermons and Sayings," "Saint Louis Series," "Thunderbolts," and "Sam Jones's Own Book."

JONSON (jŏn′sŭn), **Benjamin,** popularly called *Ben Jonson,* poet and dramatist, born in Westminster, England, in 1574; died Aug. 6, 1637. He descended from Scottish parents, who settled at Carlisle, and was educated in the Westminster schools under William Camden. He began his literary career at an early age, though his first efforts were as an actor. His early fame rests upon the production, "Every Man in His Humor," which appeared in 1598, and one part was acted by Shakespeare. His comedy, "Every Man Out of His Humor," was completed the following year. The most noted of his subsequent works are "The Silent Woman," "The Alchemist," "Masques," and "Catiline's Conspiracy." His "Masques" was written for the courts of James and Charles, and these monarchs granted him a pension, but his careless habits in the management of personal affairs kept him in constant difficulties and poverty. Most of his writings are marked with a pedantry that gives rather a dampness to his humor, while his lyrics exhibit an example of lightness and delicacy.

Jonson exercised a marked influence by strength and talent in wit, Shakespeare being his only match in that particular phase of literary strength. His disposition and constitution were impaired by strong drink, and during the last few years he was confined to his room a large part of the time. The remains were buried in Westminster Abbey, where a monument bears the inscription, "O rare Ben Jonson." "The Sad Shepherd," a drama of much beauty, was left unfinished by reason of a sudden palsy stroke.

JOPLIN (jŏp′lĭn), a city and one of the county seats of Jasper County, Missouri, fifteen miles southwest of Carthage, on the Missouri, Kansas and Texas, the Missouri Pacific, the Saint Louis and San Francisco, and the Kansas City Southern. In the vicinity are extensive deposits of zinc and lead. The average annual output of the mines within the adjacent district is valued at $34,531,200. Large quantities of fruits are produced in the vicinity. The noteworthy buildings include the Carnegie library, the high school, the Federal building, the opera house, and the Y. M. C. A. building. Among the manufactured products are machinery, ironware, cigars, steam boilers, soap, and flour. The smelting works and foundries give employment to a large number of laborers. It has a large trade in produce and merchandise. It was settled in 1870 and incorporated in 1873. Population, 1900, 26,023; in 1920, 29,902.

JOPPA, or **Jaffa,** a city in Palestine, 33 miles northwest of Jerusalem, on the seacoast of Syria. It is a very ancient city and in the time of Solomon was the port of entry to Jerusalem, being the place to which the cedars of Lebanon were floated from Tyre for the building of the temple. The Jewish prejudice concerning the Gentiles and the Christian religion was corrected after a vision seen by Peter at Joppa. In the time of the Crusades the city reached its highest prosperity, being the principal place of landing. The French under Bonaparte captured it in 1799. In 1832 Mehemet Ali reduced the city, but the Turks, with the assistance of the Austrians and British, took possession of it in 1840. At present Joppa is an export city for live stock, cereals, fruits, and various manufactures. It has railway connection with Jerusalem. The British, under General Allenby, capturned Joppa in 1917. Population, 1922, 45,150.

JORDAENS (yôr′däns), **Jacob,** painter, born at Antwerp, Belgium, May 19, 1593; died Oct. 18, 1678. He studied at Antwerp, where he formed the friendship of Rubens, with whom he worked for many years. In 1665 he was invited by Charles Gustavus of Sweden to paint a series of twelve pictures representing the passion of Christ, now in Stockholm. After the death of Rubens, he was considered the leading Flemish historical and portrait painter of his time. His figures are inclined to corpulency and his coloring is peculiarly harmonious. That he was prolific as a painter is shown by the fact that specimens of his work are in the principal galleries of Europe. Among his chief productions are "The Entombment of Christ," "Admiral Ruyter," "Christ Driving the Money Lenders from the Temple," "Triumph of the Stadtholder," "Jupiter and Mercury," and "Commerce and Industry Protecting the Arts."

JORDAN (jôr′dạn), a celebrated river of Palestine, lying in a valley that stretches from north to south in the eastern part of Syria. It has several sources, rising in the southern declivities of the Libanus and Anti-Libanus, is 150 miles long, and its mouth is 1,312 feet below the surface of the Mediterranean. In its course from Mount Hermon and Mount Lebanon to the Dead Sea it passes through the lakes Huleh (the waters of Merom) and Bahr Tubariyeh (Sea of Galilee or Tiberias). Its bed varies greatly in breadth, many places having rocky and precipitous banks, while others are flat and sandy. The average width of the Jordan is from thirty to fifty yards. It is spanned by very few bridges, the one most famous being Jacob's bridge, situated north of the Sea of Galilee. The total fall of the Jordan is 2,300 feet. Many Christians regard it a special privilege to be baptized in the Jordan, from the circumstance that Christ was baptized in the stream by John.

JORDAN (zhôr′dön), **Camille,** statesman, born in Lyons, France, Jan. 11, 1771; died May 19, 1821. His active resistance to a republican government caused his proscription by the directory in 1793, and he fled for safety to Switzerland and later to London. He returned to

Lyons in 1796, and the following year was elected as a deputy to the Council of Five Hundred, before which he advocated religious liberty. After the Revolution he resided in Germany, where he met Goethe and became imbued with a deep interest for German literature. The consulate party recalled him in 1800, when he opposed Bonaparte and boldly exposed the ambitious schemes of the First Consul. Louis XVIII. appointed him counselor of state. In 1816 he was elected to the chamber of deputies, and during the intervening periods devoted himself to literature. His speeches and writings were published several years before his death.

JORDAN, David Starr, naturalist and educator, born in Gainesville, N. Y., Jan. 19, 1851. He was educated at Cornell University and the Indiana Medical College, taught at Lombard University, Illinois, in 1872, and later at various other important educational centers. From 1879 until 1881, he was special agent for the United States Census and as such made a valuable report on the marine industries of the Pacific coast. He was connected with the Fish Commission until 1891, when he was elected president of the Leland Stanford, Junior, University, but resigned the active presidency in 1913 to become chancellor. Dr. Jordan is noted as a lecturer and writer on various subjects, including psychology, world peace, and ichthyology. Among his books are "A Manual of the Vertebrates of the Northern United States," "Footnotes to Evolution," "Imperial Democracy," "The Food and Game Fishes of North America," "The Care and Culture of Men," "The Philosophy of Despair," and "The Call of the Twentieth Century."

DAVID STARR JORDAN.

JORULLO (hô-rōōl'yô), a volcanic mountain about 150 miles west of the city of Mexico, thrown up by volcanic force on Sept. 29, 1759. It consists of numerous cones, some of which give out vapor. The highest elevation is 4,250 feet above sea level. Owing to the gradual loss of temperature, foliage and forest trees have slowly moved upward and now cover most of the region.

JOSEPH (jō'sĕf), the husband of Mary, the mother of Christ. He descended from the house of David and was by trade a carpenter. Both he and Mary went with Jesus when He was twelve years old to the feast of the Passover at Jerusalem. Joseph is not spoken of after Jesus had reached the age of twelve years. It is thought probable that he died before the crucifixion. March 19 is assigned as his festival.

JOSEPH, the favorite son of Jacob and the eldest by his wife Rachel, Benjamin being his only brother, but he had ten older half-brothers. Jacob's preference for Joseph made the elder brothers envious. When an occasion presented itself, he was sold to some slave dealers, who in turn sold him to Potiphar, an officer of Egypt, the brothers reporting him killed to Jacob. The story of the life of Joseph is given in Genesis and relates his advancement under Pharaoh, his power in interpreting dreams, his ability in business affairs, his abhorrence of sin, his making himself known to his brothers and later to his father, and his diligence in saving them all in the time of famine. Joseph died in Egypt, was embalmed, and his remains were taken to Shechem in the land of Canaan, but neither the time of his death nor of his history is known, some authorities placing it before and some after the Hyksos or Shepherd kings of Egypt. He was 110 years old when he died, leaving two sons, Manasseh and Ephraim. As the two sons of Joseph were adopted by Jacob, they received a place among the heads of the tribes.

JOSEPH, the name of two sovereigns of the Holy Roman Empire. Joseph I. was born in Vienna, Austria, July 26, 1678, and was crowned King of Hungary at the age of eleven years. He succeeded his father, Leopold I., as ruler of the Holy Roman Empire in 1705. The events of his reign include the seizure of Cologne and Bavaria, the conquest of Naples, and the War of the Spanish Succession. He died April 17, 1711. Joseph II. was born March 13, 1741, and died Feb. 20, 1790. He was a son of Francis I. and Maria Theresa and succeeded to the throne of the Holy Roman Empire in 1765, but he did not succeed his mother on the throne of Austria until in 1780. He was progressive and liberal and attempted many reforms in his kingdom and the empire. These included the abolition of serfdom, the institution of religious liberty, the abolition of monasteries, the reform of jurisprudence, and the establishment of a system of public schools, but in these measures he was opposed by the nobles and the clergy, who compelled him to yield to the opposition in 1790. His policy of Germanizing the nation was undoubtedly a wise measure, but it caused violent opposition among the Magyars and Slavs.

JOSEPHINE (jō'zē-fēn), **Marie Rose,** Empress of France, born in the Isle of Martinique, June 23, 1763; died in Malmaison, France, May 29, 1814. She received only an ordinary education, but her excellent qualities of heart and natural intellectual faculties, coupled with beauty of form and feature, won her universal regard. In her sixteenth year she married Viscount Beauharnais and was the mother of two children—Eugene, Viceroy of Italy, and Hortense, Queen of Holland. During the reign of terror in France Josephine's husband was executed and about two years later, on March 9, 1796, she married Napoleon Bonaparte. For fifteen years Josephine saw the sun of Napoleon's ambition rise, going with him on his campaigns, advising noble deeds and purposes, and restraining, if his ambition suggested measures of violence or cruelty. Josephine had no children by Napoleon, hence there was no lineal heir to the throne, and on Dec. 16, 1809, after most painful scenes, the marriage was dissolved. During Josephine's life at the Tuileries she attracted the most brilliant society of France, but after her divorce she remained secluded, retaining the title of empress and sympathizing with Napoleon in his defeat. Had the allied forces been magnanimous enough, she would have rejoined him in his exile on Saint Helena.

JOSEPH OF ARIMATHAEA (ăr-ĭ-mȧ-thē'ȧ), a member of the Jewish sanhedrin and the disciple who provided for the burial of Jesus. He was a believer in the teachings of Jesus Christ, but he did not profess his faith as courageously as his contemporaries. The evangelists agree in the account that he came to Pilate to obtain permission to take the body of Christ and that he buried it in his own garden. According to Matthew, he was a councilor, but was rich in earthly goods. In traditional writings he is spoken of as a missionary to Gaul and Britain, and is reputed the builder of the first Christian oratory near the present site of Glastonbury, England.

JOSEPHUS (jō-sē'fŭs), **Flavius,** eminent Jewish historian, born in Jerusalem in 37 A. D. His lineal descent was in both the royal and priestly lines. Accordingly, he was carefully educated in the Greek and Hebrew, which early developed his brilliant faculties, and at the age of 26 he was chosen delegate to Nero. When the last fatal trouble with the Romans began, Josephus was appointed governor of Galilee, and for 47 days of desperate resistance held the city of Jotapata against the advance of Vespasian. After the fall of the city, he remained a paroled captive for three years, and was present at the fall of Jerusalem in 70 A. D. From his autobiography we learn that he went to Rome and devoted himself to literary studies. He was married three times and is known to have survived Agrippa II., who died in 97, but his death is not recorded. However, it is assumed that he died in the year 100. Among his principal literary works are "History of the Jewish War," "Jewish Antiquities," and "Autobiography."

JOSHUA (jŏsh'u-ȧ), famous Hebrew warrior, son of Nun, of the tribe of Ephraim, and successor of Moses. He had been chosen by Moses to succeed him as commander of the forces of Israel before the Israelites had reached Sinai, and was vested with the whole civil and military government by the great lawgiver shortly before his death. Joshua was born in Egypt, and he and Caleb alone of all the hosts that left that land were permitted to enter the promised heritage. He led the Israelites over the Jordan, and in seven years conquered the greater part of Palestine and divided it among the twelve tribes. It is recorded that, when in battle with the five kings of the Amorites, he commanded "Sun, stand thou still upon Gibeon, and thou, Moon, in the valley of Ajalon," which is probably a fine hyperbole from a well-known poem. The Book of Joshua is believed by modern scholars to be the work of several authors, some of whom probably lived long after Joshua's death. He died in Mount Ephraim at the age of 110 years.

JOSIAH (jo-sī'ah), King of Judah, born about 649 B. C. It is thought that he began to reign when eight years of age. He early manifested a pious disposition and grew up under the careful instruction of the priests, becoming a determined religious reformer, establishing in Jerusalem, Judah, and Israel the worship of God. In repairing the temple the high priest, Hilkiah, found the "Book of the Torah" which excited the profoundest emotions in the breast of Josiah, containing, as it did, directions for the great reform which he was conducting with such energetic vigor. Commentators believe the book to have been Deuteronomy, while others think it may have been Exodus or the Pentateuch. Josiah was slain at the Battle of Megiddo, in the Esdraelon valley, whence he had gone to assist the King of Assyria against Pharaoh Necho of Egypt.

JOTUNS (yō'tunz), the name of immense giants and magicians, especially those spoken of in Scandinavian mythology. They are credited with living in dark caves in their kingdom known as Jotunheim. The Jotuns were thought to be destructive forces and the possessors of much cunning, but had an inferior intellect. They are represented as being skilled in the arts of witchcraft.

JOUBERT (zhōō-bâr'), **Barthélemy Catherine,** eminent general, born in Pont-de-Vaux, France, April 14, 1769; died Aug. 15, 1799. He studied to become an advocate, but entered the army at the outbreak of the Revolution, and in 1795 was promoted general of a brigade. After driving the Austrians from Mantua, in 1797, Napoleon sent him to Paris with the trophies of the campaign. In 1798 he served as general in chief in the army of Italy, captured Piedmont and Turin, and was killed in the charge at Novi.

JOUBERT (you'bĕrt), **Petrus Jacobus,** statesman and soldier, born in Cape Colony in 1834; died in Pretoria, March 27, 1900. He came from a family of Dutch-French descent, who had settled in South Africa in 1687 to escape the persecutions that followed the revocation of the Edict of Nantes. After obtaining an elementary education, he settled in the vicinity of Majuba Hill as farmer and stock raiser. He served for some years in the volksraad, and in 1870 became attorney-general of the Transvaal Republic. In 1880 he was chosen commander in chief of the Boer army, and rendered efficient service in numerous battles, including the decisive struggle at Majuba Hill. He was a member of the executive council for twenty years, in which time he showed himself a true friend to independent government, a progressive citizen, and an efficient defender of popular rights.

JOUETT (jou'ĕt), **James Edward,** naval officer, born in Lexington, Ky., Feb. 27, 1828; died in October, 1902. He became a midshipman in 1841, served against slavers, and was stationed in southeastern Texas during the Mexican War. At the beginning of the Civil War he destroyed the Royal Yacht on Galveston Bay, and in 1864 rendered efficient service in Mobile Bay under Farragut. In 1866 he became captain and in 1883 was made commodore, and commanded the North Atlantic squadron in 1885, with which he cruised along the Isthmus of Panama to protect American interests. The navy department praised him for his service and Congress voted him full pay for life. He was made rear-admiral in 1886, was president of the board of inspection and survey a number of years, and finally retired from service in 1890.

JOURDAN (zhōōr-dän'), **Jean Baptiste,** marshal, born at Limoges, France, April 29, 1762; died Nov. 23, 1833. He was the son of a surgeon and studied for the army, and in 1778 fought under Count d'Estaing in the war for American independence. In 1784 he returned to France and opened a millinery store in his native city, but became a captain of the national guard at the beginning of the French Revolution. He distinguished himself under Dumouriez, and in 1793 defeated the Austrians at Wattignies and the next year at Fleurus. He was less successful the next two years, meeting defeat at Amberg and at Würzburg, but in 1799 secured command of the army of the Danube, and was defeated at Ostrach by Archduke Charles. In 1800 he was made governor of Piedmont by Napoleon, and Lewis XVIII. raised him to the dignity of a count. He was minister of foreign affairs during the July Revolution.

JOURNALISM (jûr'nạl-ĭz'm), the business of managing, editing, or writing for newspapers or other periodical publications. It has come to be one of the important occupations in the promulgation of knowledge and the diffusion of intelligence. Within recent years periodicals have been founded in practically all parts of the world inhabited by civilized and semicivilized peoples. They have come to be regarded important avenues for the spread of news, and for instruction in politics, morals, arts, industries, theology, sport, and sociology. At the time of the operations of the Roman imperial armies accounts were published regarding their movements. These were under the direction of the generals, served as communications of intelligence to the officers of the different divisions, and are regarded the first systematic means of bearing tidings. Modern journalism dates from the 15th century and had its beginning in Germany, the first newspaper sheets being issued regularly in Saint Augsburg, Nuremberg, Ratisbon, and Vienna. However, the first publication resembling newspapers published at the present time was the *Notizie Scritte,* established at Venice in 1566. The name applied to this publication caused the word *gazette* to be coined, and shortly after gazettes were issued regularly in many of the large European cities.

Nathaniel Butter founded the first newspaper in England, which appeared as the *Weekly News* in 1662, and in the same year the London *Weekly Courant* was established. The latter was published as a daily in 1702, but consisted only of a small sheet printed on one side. Advertisements did not appear in periodicals until the latter part of the 17th century, and came to be inserted on account of notices given of new books as they were published. These notices attracted the attention of the public and led to the conclusion that advertisements of merchandise and other matters kept for sale would prove remunerative. At present newspaper advertisements are among the most profitable departments of the business, and are thought to be fully as remunerative to the advertisers as to the publishers.

It was estimated in 1916 that the number of newspapers in the world was 93,500. The number credited to the United States is 23,806; Germany, 12,480; France, 5,600; Great Britain and Ireland, 5,500; Austria-Hungary, 4,950; Italy, 2,800; and Canada, 1,478. In the other countries of Europe and in the other grand divisions the periodicals are limited to a smaller number, though more or less appear in all countries. They are published in practically all the languages.

The first newspaper founded in America was *Publick Occurrences* in 1690. This was followed by the Boston *News Letter* in 1719, and immediately after many others were established in various parts of the colonies. They rapidly gained circulation among the people in towns and later among those residing in districts remote from common centers Benjamin Franklin was one of the early publishers to gain influence. He established the Pennsylvania *Gazette* in 1729, which was merged into the *North American* in 1745. Other noted journalists of America include James Gordon Bennett, founder of the *Herald,* and Horace Greeley, founder of the *Tribune.* Since then many great newspapers and other journalistic enterprises have developed in all the large cities of Canada and the United States.

Many of the leading publishers have been induced by the rapid growth and phenomenal success in newspaper enterprises to invest their surplus capital in substantial fireproof buildings, which are used for publishing and general office purposes. These buildings are fine specimens of modern architecture, and add convenience to the management as well as serve to beautify the cities where located. Among the most prominent are those of the New York *World,* New York *Times,* Washington *Post,* Omaha *Bee,* Chicago *Tribune,* Seattle *Post-Intelligencer,* San Francisco *Chronicle,* Portland *Oregonian,* and Saint Louis *Globe-Democrat.*

Each newspaper has a business manager, whose business it is to make contracts with advertisers, keep the office records, purchase the necessary supplies, and attend to the payment of employees. The business manager works to the same end as the editor, both striving to make the publication successful and to keep its tendency in accord with the views of the owner. The editor has charge of the editorial work and supervises the reading matter that goes into the newspaper. Much of the general news is gathered and furnished by organizations known as *press associations.* The first association established to gather news was in New York City, though a number of newspapers prior to that furnished each other news under a local agreement, and this is quite commonly the case with newspapers at present. Intelligence syndicates have successful news gatherers in all sections of the world, and usually make arrangements with authors and special contributors at certain times for signed articles. These contributions are generally sold to one newspaper in a city, and are published by the different newspapers simultaneously.

The leading newspapers have branch offices in many large cities for the purpose of both gathering news and distributing their daily papers to the public. These offices are managed by American companies, not only in the United States, but in Paris, London, Berlin, and other foreign cities, though more particularly for the purpose of gathering the news. The larger organizations send special correspondents to legislatures, congresses, and the seat of war for the purpose of having the news gathered and promptly telegraphed to the central office. Readers residing out of the city of publication receive their papers through the mails or news venders, or buy them on the trains, while within the city of publication they are delivered largely by special carriers. The press is free in Canada and the United States to publish all matters of news, but may be held liable for damages or be subject to an action in libel. In most European states a strict censorship is maintained over newspapers, while during the time of war the military authorities of all countries guard carefully the transmission of intelligence regarding military movements.

The American people are the most extensive readers of newspapers, largely because of the high state of literacy, rapid means of transportation, and remarkable business activity. It is estimated that the total number of separate newspapers published in the United States in 1896 was 4,681,113,530, but in 1926 the number reached the marvelous total of 13,500,000,000. The great daily newspapers are wonderfully productive in the amount of published matter of various kinds, covering all branches of knowledge and relating to all the countries of the world. This is true especially in the Sunday edition, which usually includes sufficient subject-matter to constitute a book of fair size.

JOURNALISM, School of, an institution founded by Joseph Pulitzer (q. v.) in 1903, forming a college of Columbian University, in New York City. He endowed it with a grant of $2,000,000. The purpose is to train men in the art of journalism with the view of maintaining a high standard in the newspaper profession, and to increase the power and prestige of the press as an agency in promoting the cause of government and good citizenship. Students have access not only to a course of study in the law and ethics of journalism, but pursue advanced courses in literature, rhetoric and composition, commercial law, sociology, economics, political science, and United States and contemporary European history. Though the course of study covers a wide range, the instruction is designed particularly to supply the requirements for practical newspaper work.

JUAN FERNANDEZ (hōō-än′ fĕr-nän′-dĕth), an island about 400 miles off the coast of Chile, to which country it belongs. The island was discovered in 1574 by a Spaniard whose name it bears. It is about thirteen miles long and four broad, rocky, mostly high, but with some parts fertile. The chief products include cereals, cherries, peaches, figs, apples, grapes, melons, etc. It is famous on account of the story of Robinson Crusoe written by Daniel Defoe (q. v.), which is thought to be founded upon the solitary confinement and residence of Alexander Selkirk (1676-1723), a Scotch pirate, on the island of Juan Fernandez. He quarreled with the captain and at his own request was put off on the island, where he lived on fruit and wild goats for four years. The island is at present occupied by a number of Chilean settlements.

JUAREZ (hōō-ä′rȧs), **Benito Pablo,** president of Mexico, born in the state of Oaxaca, Mexico, March 21, 1806; died July 18, 1872. He descended from pure Indian parentage, received a good general education from a charitable friar, and began the practice of law in 1834. The liberal party elected him governor of his native state, in which position he served in 1847-52. After Santa Anna became dictator, he was banished, but returned when the republic was restored in 1855. In the same year he was elected president of the supreme court of justice, a position equivalent to vice president, and, when the liberal administration was overthrown in

1858, he became president. Shortly after entering upon the duties of the office, he was compelled to retreat to Vera Cruz, where his government received recognition by the United States in 1859. He entered the city of Mexico in 1861, was chosen president for four years, and shortly after the French declared war against Mexico and sought to force Maximilian upon the throne as emperor, but by obstinate resistance Juarez succeeded in maintaining Mexican independence. The reign of Maximilian came to an end in 1867, at which time he was shot under the direction of a court-martial, and Juarez secured an election for a second term. Numerous insurrections occurred, but his vigorous administration was proof against all uprisings calculated to overthrow the government. As a statesman and military leader he ranks among the most successful and eminent, his decisive conduct being largely instrumental in giving Mexico its present prosperity.

JUBILEE (jū'bĭ-lē), a festival celebrated by the Jews every fiftieth year, the year succeeding every seventh sabbatical year. During this year all slaves were set at liberty, all lands lay fallow, and all estates that had been sold reverted to the heirs of the original owner, to whom the land had been parceled out in the time of Joshua. The design of this institution was to check the rise of any great inequality of social conditions, and to prevent the rich from oppressing and enslaving the poor. It strengthened the bonds of families and bound the people to their country, by leading them to cherish an affection for estates derived from their ancestors and to be transmitted to their posterity. It was observed both prior and subsequent to the Babylonian captivity, but ultimately fell into disuse.

JUDAH, the fourth son of Jacob and Leah, the progenitor of the most numerous of the twelve tribes of Israel. When Joshua divided the land west of the Jordan, the portion extending south from Jerusalem to the boundary of the Amalekites, and between the Dead Sea and the Mediterranean, was allotted to the tribe of Judah. The royal house of David and Jesus Christ were descendants from Judah. See **Jews.**

JUDAS, or **Jude,** surnamed Thaddeus, one of the twelve apostles, a relative of Jesus, and brother of James the Less. Nothing is known of his life, but it is traditional that he preached and suffered martyrdom in Persia. Some writers think he is the author of the Epistle of Jude. He is commemorated on Oct. 8.

JUDAS ISCARIOT (ĭs-kăr'ĭ-ŏt), the betrayer of Jesus, one of the twelve apostles, and a native of Kerioth, Judaea. He was steward of the disciples, but was known to be avaricious and dishonest. For thirty pieces of silver he betrayed Jesus into the hands of the Jews and in a fit of horrible remorse, when his sin pressed heavily upon him, he committed suicide by hanging. The amount received for betraying Christ is commonly computed to have had a value of $22, but it had a relative value of fully $500.

JUDD, Orange, journalist, born near Niagara Falls, N. Y., July 26, 1822; died Dec. 27, 1892. He was educated at Wesleyan University, taught school three years, and in 1850 took up the study of agricultural chemistry at Yale. Six years later he became editor and publisher of the *American Agriculturist,* served as agricultural editor of the New York *Times* in 1855-63, and was with the Army of the Potomac as sanitary commissioner from 1863 to the end of the war. Subsequently he aided in building a railroad system in Long Island. He originated the "International Lesson-leaf," which is used extensively in Sunday schools. In 1857 he introduced the cultivation of sorghum from Europe, and about the same time gave the Orange Judd Hall of Natural Science to the Wesleyan University. Reverses in business made it necessary to retire from the *American Agriculturist,* but shortly after he founded the *Orange Judd Farmer* at Chicago.

JUDE, Epistle of, the last of the 21 epistles of the New Testament. It was probably written in Palestine about the year 62, and is directed against heretics and false teachers. In early times of the Christian church its authority was contested on the ground that it contains citations of apocryphal writings, though belief in its divine inspiration was general in the church. Most commentators maintain that it was written by Judas Thaddeus (q. v.).

JUDEA (jů-dē'ȧ), or **Judaea,** the name used in ancient geography to designate the kingdom of Judea to distinguish it from the kingdom of Israel. After the Babylonian captivity and up to the time of the Roman occupation it denoted the whole of Palestine. The Romans used the name in a general sense to signify the land of the Jews. In a restricted sense it applied to the southern part of Palestine, which was bounded on the north by Samaria, east by the Jordan and the Dead Sea, south by Idumaea, and west by the Mediterranean. See **Palestine.**

JUDGE, an officer who has authority to hear and determine causes at law. The term is sometimes used interchangeably with *justice,* or *lord justice,* and extends to the presiding officer in courts of both equity and civil and criminal law. Although a justice of the peace is in a certain sense a judge, he is not usually spoken of in this respect, since the term applies more properly to the judges of district, circuit, and supreme courts. These officers are sometimes spoken of as a *district judge, circuit judge,* or *supreme judge.* It is necessary that a judge be an entirely disinterested party, hence one who has a private or pecuniary interest is disqualified from hearing a case. Although a judge may be prosecuted for a violation of the law, he cannot be held for damages in consequence of his decisions.

JUDGES, Book of, one of the historical books of the Old Testament. It is so named because it narrates the deeds of the thirteen judges of Israel from Othniel ben-Kenaz to Samson, the first and the last of the judges. Though fragmentary and somewhat disconnected, it gives a reasonably full account of Beborah and Barak, Giddeon, Jephthah, and Samson. This book shows at its beginning that the calamities suffered by the Hebrews after the death of Joshua were due to their apostasy from Jehovah.

JUDGMENT, in psychology, the operation of the mind that involves comparison and discrimination, by which a knowledge of the values and relations of things is obtained. In forming a logical judgment or thought the mind has before itself two concepts, or a single percept and a single concept, and through a process of comparing decides wherein they agree or disagree, hence, every judgment involves two concepts and the decision respecting them. The concepts may be simple or very complex, and in either case knowledge is made more valuable through the forming of a logical judgment.

JUDITH (jū′dĭth), a heroine of the ancient Jews, of whom an account is given in the book of the Apocrypha that bears her name. She was of the tribe of Reuben, the widow of Manasseh, and is celebrated for delivering the city of Bethulia from Holofernes, the commander of an Assyrian army. She went forth in rich attire to the camp of the enemy, and on the third day, when she was alone with Holofernes in his tent, while he was intoxicated, she cut off his head with a falchion. The Assyrians were panic-stricken when they found that their general was dead, and were routed by the Israelites in the morning.

JUDSON (jŭd′sŭn), **Adoniram,** noted missionary, born in Malden, Mass., Aug. 9, 1788; died April 12, 1850. In 1812 he was ordained by the Congregational Board of Foreign Missions as missionary to Burmah, and with three others—Newell, Nott, and Mills—began work about a year later among the Burmese. He translated the Bible into the native language, which he completed in 1835, and in 1842 published his "Burmese and English Dictionary." His work was important from its widespread effect in bringing the Burmese to Christ, of which extensive evidences still remain. His activities were almost entirely under the Baptist Missionary Union, which he joined shortly after beginning work among the natives.

JUGGERNAUT (jŭg-gẽr-nạt′). See **Jagannatha.**

JUGGLER, one who produces tricks by sleight of hand, or performs feats in legerdemain. The magicians of Egypt were skilled in apparent sleight of hand performances, and delighted to repeat the wonders performed by Moses and others mentioned in ancient history. Tricks of different kinds have been devised by jugglers as matters of amusement or wonderment. Performers of this kind were common among the Romans and other ancient peoples. The art is still practiced largely in all countries, but particularly at exhibitions and various entertainments.

JUGO-SLAVIA, a kingdom of Europe, formed in 1918 from Servia and Croatia and parts of Bosnia, Herzegovina, Hungary, Dalmatia and Montenegro. The area is 95,628 square miles It includes the entire coast from Fiume to Albania. The inhabitants consist chiefly of Serbs, Croats, Slovenes, Albanians, Hungarians and about 525,000 Germans. Belgrade is the capital. Other cities include Agram, Brod and Sarajevo. Population, 1923, 11,960,631. See **Servia.**

JUGULAR (jū′gů-lẽr), the name of a large vein in the neck, through which the greater part of the blood that circulates in the neck, face and head is returned to the heart. There are two of these veins, located on either side of the neck, one of which is near the skin and the other is somewhat deeper, the external jugular returns blood from the face and neck, and the internal jugular from the brain and interior of the skull.

JUGURTHA (jů-gûr′thȧ), King of Numidia, grandson of Masinissa, born in the early part of the 2d century B. C.; died in Rome in 104. Many acts of cruelty caused the Romans to declare war against him, but he baffled his opponents for many years by bribing their generals, and was finally defeated by Q. Caecillius Metellus in 108 B. C. Sallust, the Roman historian, concludes the history of Jugurtha by reciting his delivery to Sulla, and his final death by starvation in a dungeon at Rome.

JUJUBE (jū′jůb), the name of a small tree native to Africa and the warmer parts of Asia and Europe. The common jujube is a small spiny tree and produces a reddish-yellow fruit about the size of an olive, which, when dried, is sold on the market as a sweetmeat. It was formerly used to make jujube paste, a well-known confection, but this product is now obtained by compounding sugar, gum arabic, and the whites of eggs. Several species of these plants have been naturalized in Mexico and the southern part of the United States. According to tradition, the spines of the jujube were used in preparing the crown of thorns placed upon the head of Christ.

JULEP, in medicine, a refreshing drink flavored with aromatic herbs. It is a sweet demulcent liquid and is used chiefly as a vehicle. The name is likewise applied to a beverage composed principally of whisky or some other spirituous liquor. A drink made with brandy or whisky and mixed with sugar and sprigs of mint is called a *mint julep.*

JULIAN (jūl′yạn), Emperor of Rome, from his renunciation of Christianity called the Apostate, born in Constantinople, Nov. 17, 331 A. D.;

died June 26, 363. He was the son of Julius Constantius, brother of Constantine the Great, and surnamed Flavius Claudius Julianus. His training was that of a Christian, and he studied letters and philosophy, but later embraced paganism while residing at Athens. He was summoned to Milan in 355, where he received the rank of Caesar and married Helena, daughter of the emperor. Soon after he was given general command of an army sent against the Germans, defeated them at Strassburg, and succeeded in forcing them to retreat beyond the Rhine. His administration in Gaul was successful, while his economical management made him popular with the various Frankish tribes. However, his growing popularity gave the emperor uneasiness, and in 360 the latter ordered a portion of his troops to proceed against the Persians. The soldiers protested against proceeding to the far East, and proclaimed Julian emperor, much against his own wishes. Soon after the emperor died and Julian became recognized as sovereign of the Roman world. About that time he proclaimed his disbelief in Christianity, permitted the restoration of heathen worship, but did not persecute either the Jews or Christians. He led an expedition against the Persians in 363, and began the rebuilding of the Jewish temple, but during a cavalry charge was wounded and died shortly after. Julian is the author of several works, the most important extant being "The Caesars" and the "Misopogan," both treating of the emperors of Rome.

JULIAN, George Washington, public man, born near Centreville, Ind., May 5, 1817; died July 7, 1899. He studied in the common school, was admitted to practice law in 1840, and soon after became a member of the State Legislature. In 1848 he promoted the organization of the Free-Soil party, whose convention he attended at Buffalo, and in the same year was elected to Congress. He was the candidate for Vice President of that party in 1852, and in 1856 attended the first national convention of the Republican party. In 1860 he was elected to Congress, was reëlected four times, and in 1872 acted with the Democrats to secure the election of Horace Greeley to the Presidency. In Congress he supported the homestead policy and the reservation of the public lands for the people. He was appointed surveyor-general of New Mexico in 1885. He published a number of books, including one entitled "Political Recollections."

JULIUS (jūl'yŭs), the name of three popes of Rome, who reigned between 337 and 1555. The most notable of these is Julius II. He was born at Albisold Marina in 1443; died Feb. 21, 1513. Julius II. occupied the papal throne from 1503 until his death. It is said of him, "he made his tiara a helmet and his cross a sword." See **Pope.**

JULY, the seventh month in the Gregorian calendar, but formerly the fifth month of the year, when it was called Quintilis. It has 31 days and is so named in honor of Julius Caesar, who was born on the twelfth day of July.

JULY, Column of, the name of a memorial erected in Paris, France, to commemorate those who fought for the liberty of that country on July 27, 28, and 29, in the year 1830. It is located in the Place de la Bastille, and on four bands that encircle the column are the names of the 615 who fell in the Revolution. Beneath the column are the vaults that contain their remains, together with those of the victims connected with the Revolution of 1848.

JULY REVOLUTION, the revolution that overthrew the Bourbon dynasty and restored the house of Orleans to the throne of France. It occurred in July, 1830, in Paris, and was the means of giving the crown to Louis Philippe. The Bourbon dynasty had become unpopular through the reactionary policy of Louis XVIII. and Charles X., and matters came to a climax when the latter undertook to interfere with the liberty of the press and to greatly abridge the right of franchise. By the July Revolution the influence of the clergy in the administration was removed. Contemporary revolts occurred in Poland and Belgium, with the result that the latter country gained its independence.

JUMPING MOUSE. See **Jerboa.**

JUNCO (jŭṉ'kō), the name of several birds common to North America, from Mexico to Canada, sometimes called black snowbirds. The plumage is ashy above and nearly white below. The nests are built of grasses and rootlets on or near the ground, and are frequently lined with hair and feathers. Birds of this class move southward as far as the Gulf of Mexico in autumn, and in the spring migrate to the northern part of the United States and Southern Canada.

JUNCTION CITY, a city of Kansas, county seat of Geary County, 135 miles west of Kansas City, at the confluence of the Smoky Hill and Republican rivers. It is on the Union Pacific and the Missouri, Kansas and Texas railroads. The surrounding country is fertile and productive and near the city are extensive limestone quarries. Large quantities of grain, flour, and live stock are shipped. The chief buildings include those maintained by the county and several schools and churches. Electric lights and waterworks are among the utilities. A military post is located at Fort Riley, which is two miles east of the city. The first settlement was made in the vicinity in 1858 and it was incorporated the following year. Population, 1925, 6,699.

JUNE, the sixth month in our calendar, so named from the Roman surname Junius. Formerly it was the fourth month and consisted of 26 days, to which four were added by Romulus. Numa took one day from it, but Julius Caesar again lengthened the month to 30 days.

JUNEAU (jū-nō'), a city and the capital of Alaska, on the Gastineau Channel, opposite Douglas island. It is located 90 miles south of

Skagway, and is surrounded by a productive gold and silver mining district. Steamships ply regularly between it and Seattle, Vancouver, San Francisco, and other cities of the Pacific coast. The enterprises include hotels, retail and wholesale stores, sawmills, bottling works, and packing and supply houses. It has a large market in furs, lumber, and merchandise. Among the improvements are electric lights, waterworks, a courthouse, and several schools and churches. It was made the capital of Alaska by an act of Congress. Population, 1926, 4,500.

JUNEAU, Lorent Solomon, pioneer, born near Montreal, Canada, Aug. 9, 1793; died Nov. 14, 1856. He became a trader with the Indians and went to Green Bay, Wis. In 1821 he obtained a tract of land from the Indians and established the village of Milwaukee. He was the first postmaster of the village and later became the first mayor of the city. He and Morgan L. Martin built the first courthouse that was erected in Wisconsin, which he presented to Milwaukee. However, he was unable to retain his property and died comparatively poor at Shawano, Wis. His remains were removed to Milwaukee, where a statue was erected to his honor in Juno Park in 1887.

JUNEBERRY, the name of several trees and shrubs found in Canada and the United States. Many species are included in this class of plants, some of which are cultivated for their flowers and others are grown for their fruit. The fruit is known as the juneberry, which is of a purple color and about the size of a cranberry. The fruit is known locally as the service berry and the mountain whortleberry.

JUNE BUG, or **May Beetle,** a large beetle common to North America. It is attracted by lamplight and often enters houses in the evening during early summer. When on the ground it is quite clumsy, but it flies swiftly through the air with a buzzing sound, and frequently strikes objects and falls from the stun received. The larvae are white grubs that injure the roots of grasses when numerous, and the adult beetles are harmful to the foliage of fruit and shade trees.

JUNGFRAU (yo͝ong′frou), meaning the maiden, a celebrated mountain of Switzerland, situated in the Bernese Alps. It has an elevation of 13,670 feet above sea level. The peak is beautified by the presence of great snow deposits. It was first ascended in 1811. A railway line pases to the summit from Lauterbrunnen.

JUNGLE FOWL, the name of a bird native to the East Indies, regarded the source of the barnyard poultry. It resembles our domestic fowls. The cocks crow and the hens cackle and cluck like the domestic species of chickens. Several allied species are native to India. They are so named from the jungles of that country, in which they are found in large numbers. They live in small parties and frequently come out of the forests to feed in the cultivated fields.

JUNIPER (jū′nĭ-pẽr), a genus of hardy exogenous shrubs and trees, belonging to the cypress subfamily of the cone-bearing group. Twenty species are known, all of which are evergreen, and abound chiefly in the temperate and cold regions of both hemispheres. The common wild juniper is generally a shrub from two to seven feet high, but in rare cases attains the height of twenty to thirty feet. In this genus the leaves are awl-shaped and the flowers are whitish. The fruit is bluish-black, about the size of a currant, and requires two years to come to maturity. Within the fruit is a stone that yields oil of juniper, which constitutes a powerful diuretic, and the product of some species serves as a local irritant. The juniper tree found in Virginia is the red cedar of North America. It bears bright blue berries. Juniper trees often attain a height of from 25 to 50 feet. The wood is valuable for manufacturing lead pencils, cigar boxes, and cabinet products, and the berries of many species are used in flavoring gin.

JUNIPER SHRUB.

JUNIPER TREE.

JUNIUS (jūn′yŭs), a signature affixed to seventy letters which were published between January, 1769, and January, 1772, in the *Public Advertiser,* in London, England. These letters became celebrated on account of the boldness with which various institutions, tendencies, and officials were attacked. Though the author never became known, public suspicion was fixed strongly on Burke and Viscount Sackville. It is now generally believed that the letters were written by Sir Philip Francis, but the evidence is wholly circumstantial. The most characteristic statement made by Junius to George III. was: "Remember that while the crown was acquired by one revolution, it may be lost by another." Henry S. Woodfall, the editor of the *Public Advertiser,* collected and published them in one volume. He was afterward prosecuted, but on some legal technicality escaped punishment.

JUNK (jŭṉk), a Chinese vessel used in navigating their seas, but which has served for voyages extended to America and Europe. It is the largest of the Chinese vessels and has no prominent stem or keel. The bow on deck is square, the stern is full, and the rudder extends beneath the bottom of the vessel. The sails are usually of matting and stretched on large center masts.

JUNO (jū′nō̇), the Roman divinity identical with the Greek Hera, but differing from her in that Juno is revered and loved as a type of the matron and housewife. The Romans believed her to watch over and guard the life of every woman from her birth to her death, but she was worshiped mostly as the protectress of married women. A grand annual festival to her honor occurred on the first of March, called the *Matronolia,* and was accompanied with much solemnity. Two celebrated temples were dedicated to her in Rome, one on the Capitoline Hill and the other on the Aventine. She is described by Virgil as the wife of Jupiter in much the same relation that Homer represents Hera as the spouse of Zeus, each being jealous of her husband.

JUNO.

JUNOT (zhü-nō̇′), **Andoche,** duke of Abrantès, marshal of France, born in Bussy-le-Grand, France, Oct. 23, 1771; died July 29, 1813. In 1792 he entered the army as a volunteer and became distinguished by energetic service in the wars of the republic. Having attracted the attention of Napoleon, he was engaged for service in the expedition to Egypt, and defeated 10,000 Turks at Nazareth. Later he served in the army sent to Portugal and succeeded in conquering the principal fortifications for France. These successes caused Napoleon to make him duke of Abrantès and governor of Portugal. Wellington defeated him at Vimeiro, causing him to lose all advantages in Portugal, but he subsequently served in Germany, Spain, and Russia. The disaster at Moscow caused Napoleon to disgrace him on a charge of carelessness, but soon after sent him as governor to Illyria. These and other difficulties brought about a derangement of his mind, and he died from the wounds inflicted in an attempt to commit suicide.

JUNTA (jŭn′tȧ), the Spanish name given to legislative assemblies and administrative councils. The assemblies of the representatives of the nation called by the monarch in the Middle Ages were termed general juntas, and Charles II. established a great junta to regulate the competency of the Inquisition. Subsequently the name was extended to assemblies of a strictly legal character.

JUPITER (jū′pĭ-tẽr), or **Jove,** the principal Roman deity, corresponding to the Greek Zeus and to the Sanskrit Dyaus. He was considered lord of life and death in the widest and most comprehensive signification, having power over both, in which respect he differs from the Greek Zeus, who was to a certain extent controlled by the sway of the Fates (q. v.). Zeus sometimes visited mankind under different disguises, but Jupiter always remained essentially the supreme god of heaven and never appeared upon earth. In statuary he is represented seated on a throne of ivory, holding a sheaf of thunderbolts in his right hand and a scepter in his left, while an eagle stands behind the throne. The most celebrated temple erected in his honor was that on Capitoline Hill, in Rome, which was built by Tarquin.

JUPITER, the largest planet of the solar system, fifth in order of distance from the sun, being situated in space an average of 478,500,000 miles from that luminary. The mean diameter is about 86,000 miles and the polar diameter is about 82,200. It has a density of about one-fourth that of the earth, but the bulk is nearly 1,250 times greater. It is estimated that the weight is 300 times as great as that of our planet. The orbit of Jupiter is inclined to the ecliptic at the angle of 1° 18′ 40″, and its period of revolution round the sun is eleven years and ten and one-third months. It is believed that the interior mass is intensely heated, which gives rise to light and dark belts. They are usually parallel to each other, but often merge into one another, and somewhat resemble the spots seen on the sun. When viewed with the naked eye, it is the brightest planet, next to Venus. In 1610 Galileo discovered four of the satellites, or moons, of Jupiter. The principal characteristics of each are as follows:

SATELLITES OF JUPITER.

NAME.	Mean Distance From Jupiter.	Diameter, Miles.	Density Water As 1.	Sidereal Period.		
				D.	H.	M.
I. Io..............	267,380	2,352	114	1	18	28
II. Europa	425,156	2,099	171	3	13	4
III. Ganymede.....	678,393	3,436	396	7	3	43
IV. Callisto	1,192,823	2,929	222	19	16	32

To the above list must be added five others, including one discovered by E. E. Barnard in 1892, another by C. D. Perrine in 1904, and still another by the same astronomer in 1905. However, these are small and comparatively insignificant. The satellites of Jupiter, like that of our planet, revolve once upon their axis while making one complete revolution round the planet. They are eclipsed in the shadow of Jupiter and also by their own shadows, and appear to move in lines nearly parallel from one side of the planet, thus evidently having orbits similar to the orbit of Jupiter, but within the plane of the ecliptic of that planet. In 1706 the Danish astronomer, Olaus Römer (1644-1710), carefully observed the eclipses of Jupiter's satellites and discovered the progressive movement of light. Prior to his time light was considered instantaneous, but he became convinced that it requires sixteen and one-half minutes to travel the orbit of the earth, which has since been verified by the phenomena of the aberration of light, and the velocity has been fixed at 186,000 miles per second.

JURA (jū'rȧ), a range of mountains in Europe, chiefly in France, Germany, and Switzerland. These highlands trend from northeast to southwest and form the principal boundary between France and Switzerland. In Germany the range is called the German or Franconian Jura. The name is derived from the Jurassic limestone which constitutes the principal geological formation, though this is alternated with sands belonging to the lower Cretaceous series. Several gorges cross the mountain range, and it is otherwise characterized by stalactite caves in which the bones of extinct animals are numerous. The Ain and Doubs rivers rise in the western slopes and form tributaries of the Rhone. Among the highest peaks are Crêt de la Neige, elevation 5,650 feet; Reculet, 5,648 feet, and Mont Tendre, 5,520 feet.

JURASSIC (jū-răs'sĭk), a system of rocks, so named from the Jura Mountains in Switzerland, found above the Triassic and below the Cretaceous systems. Rocks of this system occur in all the continents, but they do not correspond in all cases with the system of Europe. In general they are assigned to the Mesozoic Era, and in most instances are associated with the formations designated as the Lias and the Oölite. They cover large areas of France and Germany, where they contain several thousand species of fossils, and are traceable in Colorado, California, British Columbia, and other sections of North America. The reptiles are very prominent among the fossils, especially the lizards and the Pterosauria, a class of flying reptiles.

JURUÁ (zhōō-rōō-ä'), a river of Brazil, rises in the Andes of western Peru, flows toward the northeast, and joins the Amazon some distance above Fonteboa. Its entire length is 1,100 miles, of which about 560 miles are navigable. The valley of the Juruá is timbered heavily and yields large quantities of rubber.

JURY (jū'rȳ), a body of men selected under legal provisions, impaneled, and sworn to investigate questions of fact, and to return a true verdict or decision according to evidence legally placed before them. Two kinds of juries are maintained in connection with courts of justice, grand juries and petit, or common, juries. *Grand juries* generally consist of less than twenty-four men and more than eleven, who are summoned by the county, or parish, sheriff and duly impaneled for service, though in some states the jurors to serve are limited to five or seven, these being selected by lot from the whole number summoned, and those remaining are excused. After administering the necessary oath, the presiding judge instructs them in their duty, when they repair to a closed room and select a *foreman* from their number. Their duties include the consideration of various accusations brought before them by the county attorney, or others, and if they agree by unanimous vote that certain charges against individuals are based upon fact and are of indictable character, they return a *true bill* or *indictment,* which forms the basis of subsequent prosecution in the court of record, otherwise the accusations are dismissed for want of sufficient foundation. Grand juries hear only one side of criminal procedures. They are relics of the Star Chamber abolished by the Magna Charta, a document which was exacted by the people of England from King John in 1215. They have been abolished in a number of the states.

Petit juries in most instances consist of twelve men, unless a smaller number is agreed upon by the parties to a cause. A petit jury is summoned to serve both in civil and in criminal cases. The decision of a trial jury, known as the *verdict,* is reached by a unanimous agreement. In the lower courts and in some special cases, juries consist of a smaller number of men, usually six. The panel for juries in courts of record includes generally twenty-four men, of which twelve are selected by parol, though a number of those chosen in this way may be excused peremptorily, or all may be challenged for cause. After the trial jurors have been finally chosen, they are sworn by the clerk or the judge. They hear the evidence in the cause, listen to the plea of the attorneys, are instructed by the judge in relation to points of law, and retire for the purpose of agreeing upon a verdict.

After an agreement has been reached, the jury reports by a written and sealed verdict to the judge at the session of court immediately following an agreement, and before being discharged from service. However, if they cannot reach an agreement, they are discharged from service and a new jury may be impaneled to try the same cause at the same or a subsequent session of the court, though causes of a criminal nature cannot be taken up for trial a second time in case the accused is found *not guilty.* In cases of death by accident or violence, a *coroner's jury* is summoned for the purpose of determining the cause from which death resulted. It is under the direction of the county coroner, or an officer corresponding to a justice of the peace. The investigation may be made at the place where death occurred and in the presence of the body, and, in some cases, a corpse may be exhumed for that purpose. The person or persons who are designated by a coroner's jury as being guilty of a crime are subject to indictment by the grand jury, and triable by the petit jury. However, in many instances, as in a case of death by accident or from an unknown cause, it is impossible to determine who is responsible when no one is accused.

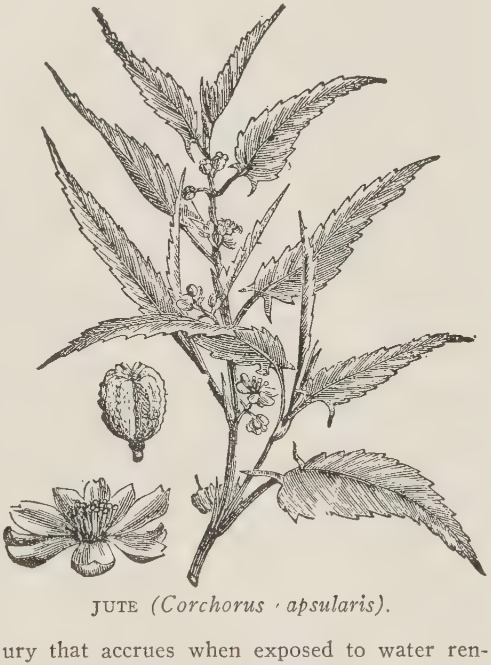
JUSTICE, Department of. See **United States, Departments of.**

JUSTICE OF THE PEACE, a subordinate official in Great Britain and the United States, elected or appointed to exercise certain subordinate administrative functions within the limit of a town, borough, or county. Such an officer in the United States is elected by the people and has jurisdiction in minor civil and criminal cases. He may act as coroner and solemnize marriages in some of the states. In most instances he has the power to hold a preliminary examination of those who are charged with grave offenses, and he may either dismiss or bind them over to appear for trial in the upper courts. The duties of the justice are practically uniform in most divisions of Great Britain, but in England this officer is appointed by the Lord Chancellor, and the judicial functions are supplemented by certain executive duties.

JUSTIFICATION (jŭs-tĭ-fĭ-kā′shŭn), a doctrine of Christian theology. It is based upon the writings of Saint Paul, particularly on his epistles to the Galatians and the Romans. The doctrine teaches that justification is an act by which the individual is accounted just or righteous in the sight of God. It is not a mere remission of sin, but embraces the sanctification and renewal of the inward man through the voluntary reception of the grace of God. The doctrine had its beginning at the time of the Reformation, when Luther came to his spiritual liberty and taught the doctrine of justification by faith.

JUSTINIAN I. (jŭs-tĭn′ĭ-ạn), surnamed *The Great,* Emperor of Byzantium, born in the village of Tauresium, Illyria, about 483 A. D.; died Nov. 14, 565. He was the nephew of Emperor Justin, was born a slave, secured a good education at Constantinople, and received a share in the prosperity of his uncle. In 521 he was chosen consul. He was made coemperor in the government with Justin in 527, and at the death of the latter was proclaimed emperor. Owing to a wise selection of generals, his reign of 38 years became the most successful in the later history of the Roman people. The generals chosen by him included Belisarius, who in 523 and in 529 defeated the Persians and attained victories in Africa. Narses, another of his commanders, overthrew the Ostrogoths' supremacy, thereby widening the Roman dominions to about the same extent as the limits during the time of its higher prosperity. Besides being a wise ruler, Justinian ranks as a great lawgiver. He commissioned ten learned civilians to codify the imperial statutes. These, however, did not contain all the laws, since the greater part of the Roman law was included in the writings of commentators and jurists. Under the direction of Tribonian a commission prepared a single treatise that embodied all the common law, which was published after four years of labor as the "Digest." It was published in a complete form in fifty volumes. Tribonian also published a treatise on law which served as a text-book for students and is known as "Justinian's Institutes." Likewise, Justinian's attention was turned to the building of cities, fortresses, and churches. He rebuilt the celebrated Church of Saint Sophia at Constantinople. His intentions were both just and upright, but the extensive movements favorable to progress and improvement greatly burdened the people with taxes, and his successors were not capable of carrying forward the vast enterprises for which his reign is noted.

JUTE (jūt), the fiber of two plants of India, belonging to the natural order *Tiliaceae.* They are cultivated extensively in the warmer countries of Asia and elsewhere. The plants are annuals, have yellow flowers, and attain a height of from five to fifteen feet. The fiber forms the inner bark and is separated from the outer by steeping in water for several days. It is of fine texture, possesses a shining surface, and the injury that accrues when exposed to water renders it illy adapted for canvas and cordage. However, it is used profitably for carpets, gunny bags, and in a mixture with hemp for cordage and mats. Paper is made from the smaller fragments and cuttings. Though cultivated and used in manufactures in India for many centuries, jute did not come largely into use in America until 1830. Within recent years the plant has been naturalized and is now grown successfully in the southern part of the United States. Gunny-bags are employed largely in transporting cot-

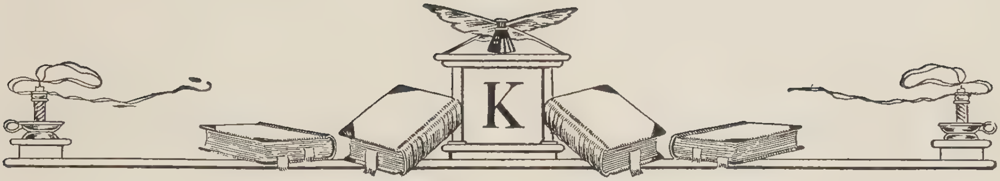

JUTE (*Corchorus capsularis*).

ton, rice, pepper, coffee, and other articles of commerce from Asiatic ports, while the raw material is transported to the manufactories of America and Europe. Dundee, Scotland, is noted as a center of the jute manufacturing industry. The annual importation of jute to the United States is valued at $3,500,000. In 1922 the total consumption of the world was 7,500 tons.

JUTES, the name of a people who resided in the lowlands of Germany at the beginning of the Christian era. They were closely associated with the Angles and Saxons in the conquest of England in the 5th century. Bede (q. v.), the Saxon writer of England, classifies the Teutons who conquered England into Angles, Jutes, and Saxons, but some writers treat the Jutes as Frisians.

JUTLAND (jŭt'la̤nd), in Danish *Jylland,* an important peninsula of Europe, located north of Germany. On the east, north, and west it is bounded by the Cattegat, Skager Rack, and the North Sea. It comprises the principal portion of Denmark. The area is 9,746 square miles. Nearly all the surface is low, but a ridge of hills runs through the center from north to south, the highest point being 564 feet above the sea. The inhabitants have preserved the customs and language of the ancient Jutes, who were a powerful people of Northern Europe in the 5th century, and with the Angles and Saxons conquered and settled portions of Britain. Aalborg and Aarhus are the principal seaports. Population, 1921, 1,498,479.

JUVENAL (jū'vē-na̤l), **Decimus Junius Juvenalis,** Roman satirical poet, born in Aquinum, a Valscian town, about 55 A. D. His father, a Roman citizen, resided at Aquinum on an estate, and Juvenal was sent to be educated at Rome, where he formed the friendship of Quintilian and Martial. Little is known of his history, but it is certain that he served as an ex-tribune in the army of Domitian about 81 A. D., and became censor of his native town. He traveled extensively in Europe, Asia, and Upper Egypt. Later he became distinguished for his numerous writings, of which fifteen satires are extant. These productions, besides possessing literary value, furnish excellent pictures of Roman life and customs. They are forceful in language and give clear exhibits of the social corruption among the Romans, which is expressed by an indignant and heartfelt solicitude. The tenth of the satires is known as "The Vanity of Human Wishes" and is considered the most explicit and popular of these writings. Several works of Juvenal were translated by Samuel Johnson, Dryden, and Gifford. The satire used by Juvenal was employed for the purpose of exposing the crimes, tyranny, and follies, and not, like those of Horace, as a branch of popular comedy.



K, the eleventh letter and eighth consonant of the English alphabet. It has a guttural articulation before all consonants and vowels, except before *n*, where it is silent, as in *knell, knife,* and *knit.* From the 16th to the 18th centuries it was written after *c* at the end of a word for the purpose of strengthening the hard *c*, as in *publick, musick,* and *almanack.* In the French the letter *k* is used only in a few Greek derivatives, and in the Italian, Spanish, and Portuguese it has gone out of use. In German some words are written either with *c* or *k*, as *Carl* or *Karl, Cöln* or *Köln.* As a symbol, in chemistry, *K* stands for potassium (*kalium*). K signifies *knight;* K. B., Knight of the Bath; K. G., Knight of the Garter.

KAABA (kȧ-ā'bȧ), or **Caaba**, an oblong stone structure in the great mosque of Mecca. It constitutes the sacred shrine to which Moslems make their pilgrimages for religious worship. According to legendry, it is located on the spot where Adam offered his first worship after being expelled from the Garden of Eden. Some writers assert that a tent was sent from heaven in which the worship took place, but others hold that Adam built a structure of stone and clay, which was destroyed by the deluge, but was afterward rebuilt by Abraham and Ishmael. The structure is 45 feet wide, 55 feet long, and about 40 high. It occupies a place in the sacred area of the mosque, which is surrounded by a wall and colonnades. The black-stone, or *Keblah,* is at the southeast corner of the Kaaba, where it is held by masonry, and toward it every pious Moslem directs his face when praying. To kiss the Kaaba is the supreme object of every pilgrim.

KABUL (kä'bul), or **Cabul**, the capital of Afghanistan since 1774, when it was made such by Timour. It is situated in a province of the same name, at the junction of the Loghar and Kabul rivers, on a productive plain southwest of the Hindu-Kush Mountains, at an altitude of 6,375 feet above the sea. The walls of former times are largely in ruins. Besides a number of government buildings, it contains a Jewish synagogue, several mosques, and the tomb of Sultan Baber. The manufactures consist chiefly of marble products, guns and ammunition, textiles, and machinery. It has systems of electric lighting and waterworks, but the streets are not well paved. Many of the buildings are of wood and adobe brick. It has an important trade in merchandise, fruits, jewelry, and live stock. Many of the bazaars are large and are noted for their trade in fine carpets and rugs. Kabul was captured by the British in 1842 and 1879. Within recent years it has been influenced more or less by the advances of Russia. The inhabitants include Afghans, Hindus, and Jews. Population, 1922, 68,502.

KADESH BARNEA (kā'dĕsh bär'ne-ȧ), a city mentioned in the Scriptures as the place of encampment of the Israelites as they journeyed on their exodus from Egypt. It was the death place of Miriam, sister of Moses, and became celebrated on account of Moses and Aaron offending the Lord by presuming that water would flow from the rock when struck before the people with a rod in their own name, rather than by the help of God. For this sin Moses and Aaron were punished by being forbidden entrance into the promised land. The district of Kadesh is prominent in the accounts written of Abraham, Hagar, and Ishmael.

KADIAK (käd-yăk'), an island immediately south of Alaska. It is about 100 miles long and 60 miles wide. The area is 4,680 square miles. Much of the surface is rugged. Numerous inlets characterize the coast, which is rocky and more or less precipitous. The climate is made disagreeable by dense fogs and frequent rains. The principal industries are fishing, canning, and furring. The salmon canning industry employs 1,250 hands and derives its supply of fish mainly from the Karluk River. Saint Paul, the principal town, is a shipping point of fur and fish. The population, consisting chiefly of Eskimos, is about 2,500.

KAFIR CORN, a species of sorghum which is native to South Africa. It has been naturalized in the arid region of the United States, where it is grown extensively for fodder and for its seed. Large fields of this product are grown in the region extending from western Nebraska to the Gulf of Mexico. It is drilled in rows similar to sorghum and cultivated in the early growing season like corn. The crop is harvested with a corn harvester, by which the stalks are bound in bundles or sheaves, after which it is either thrashed to separate the seed, or both the stalks and the seed are fed to stock.

KAFIRISTAN (kä-fê-rês-tän′), meaning *the country of infidels,* the name applied to a region of Asia, located southeast of Afghanistan. The area is about 5,000 square miles. It is situated between the Hindu-Kush Mountains and India. The country is mountainous and is inhabited by the Siaposh, or Kafirs, a native race consisting of tribes that vary greatly in stature and complexion. They engage chiefly in agriculture, fruit growing, and cattle raising. They have become distinguished for their love of independence and their strenuous resistance to the Mohammedan faith. Their dress is mostly of goatskins and fabrics woven from the hair of goats. Some writers consider the Kafirs of Asia an admixture of Greeks and Hindus. The total number of these people is about 200,450.

KAFIR CORN.

KAFIRS (kăf′ẽrz), or **Kaffirs,** an Arabic word meaning *unbelcivers,* the common name of the most important native race of Southeastern Africa, a branch of the Bantu family. The region occupied by these people extends with more or less variation from Delagoa Bay to Cape Colony. The head of the Kafir is shaped more like that of Europeans than the head of Negroes. The nose is high, the hair is frizzled, and the complexion is brown, with lighter variations in those found in the southern districts. In their habits they are frugal and simple. The race generally is tall and muscular and the occupations pursued chiefly are hunting and cattle raising. The women engage to some extent in the cultivation of cereals, vegetables, and fruits. Several distinct branches of Kafirs have been described, including the Swazi, Pondos, Fingoes, and Zulus. The last named tribe is especially numerous in the British colonies of Natal and Cape Colony, and has shown marked improvement under the influence of missionaries and teachers. As a rule the Kafirs are deficient in sentiments of religion. They are exceptionally superstitious and generally believe in witchcraft.

The first accounts of the Kafirs were published in 1617, when they came in contact with the Dutch colonists, who began to make settlements near the Cape of Good Hope. After 1688 they are mentioned frequently in the colonial records kept by the Dutch. After settling in Cape Colony, the British began to press them and claim their lands, which resulted in several wars, notably those in 1811-12, and at numerous times since. The War of 1846 led to the reservation of a district known as Kaffraria, which in 1853 was made a crown colony. Originally they occupied territory which comprised 1,000,000 square miles, but with the general occupation of Africa by European powers they have been largely localized and their habits of living have been greatly modified. The total number at present is about 3,000,000. See **Zulus.**

KAGÓSHIMA (kä-gô-shē′mä), a city of Japan, situated on the Kagóshima River, at the southern end of the island of Kiushiu. It is an important seaport, contains a college, and has a large trade. The manufactures include earthenware, clothing, silks, and machinery. It has electric lights, waterworks, and well-paved streets. The export trade is chiefly in tea, rice, and camphor. Population, 1922, 59.001.

KAILAS (kī-läs′), an elevated mountain peak of the Himalayas, situated near the Sutlej and Indus rivers. The summit is 20,230 feet above sea level. It is celebrated as a sacred mountain of the Hindus. The slopes are covered with fine forests of deciduous and evergreen trees.

KAISER (kī′-zẽr), a word derived from the Latin term Caesar and applied as the official title of the Emperor of Germany. The title was originated from certain provinces near the Danube formed by Diocletian and, though anciently assigned to a Caesar, they became a part of the German Empire in 1438. When William III. of Prussia was proclaimed Emperor of Germany at the conclusion of the Franco-German War, in 1871, the ancient title of the German Emperor was revived.

KAISER WILHELM CANAL, an artificial waterway of Germany, extending from Holtenau on the Baltic to Brunsbüttel on the Elbe. It connects the navigation of the North Sea with that of the Baltic Sea. The width at the bottom is 85 feet and at the surface it is 190 feet. It is 29 feet deep and 61.3 miles long. This canal shortens the distance from the Baltic to the North Sea about 200 miles. It was constructed by the government of Germany for naval and military purposes, but is utilized in the freight and passenger traffic. The canal was completed in 1885 at a cost of $39,500,000.

KAISER WILHELM'S LAND. See **New Guinea.**

KAISERSLAUTERN (kī-zẽrs-lou′tẽrn), a city of Germany, in the Bavarian Palatinate, forty miles west of Mannheim. It has convenient railway facilities, an industrial museum, fine public schools, and a large Protestant church. The manufactures include furniture, cotton and woolen goods, boots and shoes, machinery, and ironware. It contains the ruins of a palace built by Frederick Barbarossa in the 12th century. In 1801 it was made a part of France, but in 1816 became a possession of Bavaria. Within recent years it has grown rapidly, owing to the establishment of large manufacturing enterprises, and it is supplied with electric lights, waterworks, and street railways. Population, 1905, 52,306; in 1920, 53,803.

KALAHARI (kä-lȧ-hä′rē̇), a vast desert in South Africa, located north of the Orange River and immediately east of Southwest Africa. The extent from east to west is 400 miles and from north to south, 600 miles. Much of the surface is level, having an elevation of 3,500 feet, and vegetation thrives in various parts of the interior. Rains fall copiously from August to April, but the rivers and most of the lagoons dry up during the season of drought. Bushmen and Bakalahari are the principal inhabitants. The giraffe, lion, leopard, antelope, and other wild animals are met with. Melons, grasses, shrubs, and thorny trees comprise the principal plants.

KALAMAZOO (kăl-ȧ-mȧ-zo͞o′), a city in Michigan, county seat of Kalamazoo County, on the Kalamazoo River, forty miles from Lake Michigan. It is on the New York Central, the Pennsylvania, the Grand Trunk, the Michigan Central, and other railroads. Large quantities of celery, fruits, and grain are grown in the vicinity. The noteworthy buildings include the post office, the city hall, the public library, and the Y. M. C. A. building. It is the seat of the Western State Normal School, the Kalamazoo College, the Michigan Asylum for the Insane, and an academy of music. Among the industries are flouring mills, iron foundries, and factories for the production of windmills, plows, caskets, machinery, sleds, cigars, and furniture. The place was settled in 1829, incorporated as a village in 1843, and chartered as a city in 1884. Population, 1920, 48,487.

KALAMAZOO, a river in the United States, rising near the southern boundary of Michigan, in Hinsdale County. It has a general course of 200 miles toward the northwest, flowing into Lake Michigan 28 miles south of Grand Haven. The mouth is deep and is entered by large vessels. Along its banks are fine forests and it furnishes excellent water power. Kalamazoo and Battle Creek are on its banks.

KALB, John, Baron de. See **De Kalb, John.**

KALEIDOSCOPE (kȧ-lī′dō̇-skōp), an optical instrument which produces an endless variety of symmetrical and beautifully colored designs, invented in 1817 by David Brewster. It is made of a tube with two plane mirrors, usually formed of slips of glass from six to twelve inches in length, darkened at the back. It tapers in width from about three inches at one end to one inch at the other. Some varieties are made rectangular, but the trapezoidal form is the most common. The mirrors are adjusted so their reflecting surfaces face each other and form any angle of which 360 is a multiple, the usual angle being 60°. The conical tube is made of paper, tin, or brass. It is a trifle larger than the mirrors, and of sufficient diameter at its wider end to inclose their points. A metal plate containing a small hole at the center closes one end of the tube, to which the eye is applied. The opposite end contains two plates, the one next the eye being of clear glass and the other being ground, between which a number of beads or small pieces of colored glass are placed so they may move freely. When applied to the aperture, the eye sees beautiful symmetrical figures produced by the mirrors, and these are greatly diversified whenever the tube is shaken or turned. It has been a favorite toy from its invention, but also serves a useful purpose for illustrating the optical problem of the multiplication of images produced by reflection. It is used by designers to secure patterns for calico, carpets, and wall papers.

KALI (kä′lē̇), the name of a Hindu goddess, formerly worshiped with sacrifices of human beings. She is one of the forms of the wife of Siva, and is the goddess of cholera and other epidemics. In statuary she is represented standing on the body of her husband, wearing a necklace of skulls and a belt of serpents. A famous shrine built to her memory is maintained at Calcutta, where goats and other animals are offered as a blood sacrifice on her alters.

KALISPELL, county seat of Flathead County, Montana, 155 miles northwest of Helena, on the Stillwater River and on the Great Northern Railway. It has paving, electric lights and railways, wholesale houses, and a large trade in farm produce and machinery. The features include the courthouse, city hall, high school, Elk's Building, Carnegie library, and federal building. It was settled in 1891 and incorporated in 1892. Population, 1920, 5,147.

KALISPEL, or **Pend d'Oreille,** a tribe of Indians in the United States, found chiefly in Idaho and Washington. They are federated with the Flatheads and Kootenai Indians on the Flathead reservation.

KALK (kälk), a town of Germany, in Prussia, on the Rhine. It is located opposite Cologne, with which it is connected by railway and electric lines. Formerly it was a part of Deutz, but became a separate city in 1867. Population, 1920, 33,468.

KALMIA (kăl′mĭ-ȧ), a genus of shrubs native to North America, consisting mostly of evergreen species. The common kalmia attains a height of three feet and bears corymbs of beautiful flowers. To this class of plants belongs the *mountain laurel,* which is native to the Allegheny Mountains, where it grows to the height of thirty feet. It has been naturalized in Europe as a favorite garden shrub.

KALMUCKS (kăl′mŭks), or **Calmucks,** a people of the Mongolian race. In character they are warlike and nomadic and engage largely in agriculture and stock raising. The Kalmucks are native to the Chinese Empire and certain districts of Siberia and European Russia, extending westward as far as the Volga. They are colonized in large settlements on the Volga, Ural, and Don rivers. In stature they are of middle height, possess considerable strength, and are marked by prominent cheek bones, a short chin, a thin beard, and very shaggy hair. Their religion is Lamaism. The language is allied closely to the Mongolian proper, and is written with a similar alphabet and grammatical construction. The total number includes about 700,000, of which one-half reside in China, about 125,000 in Russia, and the remainder in Central Asia. They have conducted numerous wars against the Tartars, Chinese, and Russians. Those in Europe have been converted largely to the Greek Church by Russian missionaries.

KAMA (kä'må), a river of Russia, the largest branch of the Volga. Its source is in the province of Vyatka. It makes a bold turn through Perm and flows into the Volga in the province of Kazan, about forty miles below the city of Kazan. The Kama forms a part of the principal highway of commerce for boats between Saint Petersburg and Siberia, is free from ice about eight months of the year, and has been improved by several canals. The total length is 1,300 miles. It is navigable about 850 miles. A canal connects it with the Dwina, thus uniting the White and Caspian seas.

KÂMA, or **Kâmâdēva,** the god of love among the Hindus, corresponding to Cupid of the Romans and Eros of the Greeks. He was the son of Brahma and lost his life while trying to tempt Siva, but was born again as the son of Kirshma. After his second birth he was called Pradyumna, another name for Cupid. In statuary he is represented with a bow made of sugar cane, which is strung with a line formed of bees, and he bears five arrows ornamented with the blossoms of flowers. With these arrows he is able to overcome the five senses.

KAMCHATKA (kåm-chät'kå), or **Kamtchatka,** a peninsula which extends from northeast to southwest in the northeastern part of Asia. It is bounded on the east by Bering Sea, south by the Pacific, and west by the Sea of Okhotsk. The area is 104,000 square miles. It varies in width from 70 to 250 miles, being the widest in the central part, and is about 700 miles long. The climate is cold, though vegetation during the warmer parts of the year is remarkably luxuriant. The Kamchatka is the most important river, having a length of 110 miles, and flows northward through the most fertile and populous portion of the peninsula. Among the minerals are iron, copper, mica, lignite, and sulphur, which are mined largely under Russian supervision but the principal products include furs and fish. Many fur-bearing animals are native to the region, including the beaver, bear, sable, and Arctic fox. The inhabitants consist chiefly of Kamtschadales, Koryaks, and Russians. Since 1706 it has been a possession of Russia. It is governed from the local capital, Petropavlovsk, a town of 1,200 population. The total population of the peninsula is 7,250.

KAMEHAMEHA (kä-mĕ-hä'mĕ-hå), the name of five kings of the Hawaiian Islands, who ruled successively from 1811 to 1872, except only the period between 1824 until 1833, when the government was under the regency of two queens of Kamehameha II.—Kamehameha I., the first of these rulers, was aided by several European vessels in subjugating the whole group, which was effected in 1809. He introduced a number of civil arts by employing European mechanics.—Kamehameha II. was the son of the preceding king. He abolished idol worship on ascending the throne, in 1819, and secured the service of missionaries from Boston to teach his people the rudiments of reading and arithmetic. In 1824 he and his queen visited London, where both died of measles.—Kamehameha III., brother of the preceding, ascended the throne when nineteen years of age, in 1833. He was educated by American missionaries, granted the people a written constitution and a code of laws in 1848, and exercised considerable influence for education and civilization.

The United States recognized the independence of Hawaii in 1842, and France and England did likewise the year following. On Dec. 15, 1854, the king died childless in Honolulu, aged forty years.—Kamehameha IV., nephew of the preceding, was born in Hawaii, Feb. 9, 1834; died Nov. 30, 1863. His education was secured under American missionaries. After visiting in the United States, England, and France, he succeeded to the throne in 1854.—Kamehameha V., eldest brother of the preceding, was born Dec. 11, 1830; died Dec. 11, 1872. He held the position of minister of the interior and commander in chief of the army during his brother's reign, and succeeded to the throne in 1863. He opposed the constitution, thinking it too democratic for the common weal, and called a convention to form a new one, but dissolved it himself, and prepared a constitution less democratic than the one formerly in force. While fearless, strong-minded, and firm, he was suspicious of the people and avaricious in his government. He left no heir to the throne, and the dynasty ended with his reign.

KAMERUN (kä-må-rōōn'), or **Cameroon,** an extensive colony on the west coast of Africa, extending from the Cross River to the mouth of the Rio del Rey. It is bounded on the north by Lake Tchad, east by French Congo, south by Spanish Rio Muni, and west by Nigeria. The area is 250,000 square miles, including the part annexed from French Congo in 1911. It is crossed by the Kamerun Mountains, with peaks of 13,760 feet. The Kamerun River, from which it derived its name, flows into the Bight of Biafra by an estuary over twenty miles wide. Much of the colony is fertile and produces grasses and other plants in profusion. The rainfall is abundant and the climatic conditions are favorable to agriculture and stock raising. Among the products are tobacco, vanilla, palm oil, cloves, and cereals. The mines yield cobalt, iron, silver, and gold. Rubber, ivory, fruits, palm oil, grains, and live stock are exported. The chief town is Kamerun, on the Atlantic coast, and the most important trading stations are Campo, Bibund, and Victoria.

The colony is governed under a colonial governor, who is assisted by a chancellor and a legislative council. Buëa is the capital and largest town. Schools are maintained at Garna, Victoria, Duala, and other points. Kamerun became a colony of Germany in 1884. The boundary between it and the Niger Coast Protectorate was formerly settled in 1893. Most of the inhabitants are Bantus. Kamerun was made a British mandatory in 1919. Population, 1919, 4,680,500; including 1,350 whites.

KANAKA (kȧ-nä′kȧ), the name applied by white traders and sailors to a native of the Hawaiian Islands. Later the term came into use to designate the natives of New Caledonia, the New Hebrides, and other oceanic islands. The term kanakas is now used in the sense of the name *coolies,* when speaking of the native laborers of Hawaii.

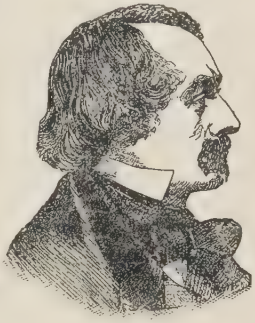
KANAZAWA (kä′nȧ-zä′wȧ), a city of Japan, situated near the northeastern coast of the island of Hondo. It contains numerous public institutions, several famous temples, and ruins of old fortifications. The manufactures include porcelain, silk, toys, and paper. It has railroad connections, waterworks, several parks, and a large trade. Population, 1922, 99,657.

KANDAHAR (kȧn-dȧ-här′), **or Candahar,** one of the principal cities of Afghanistan, situated 250 miles southwest of Kabul, at an elevation of 3,400 feet. Its location on a general route to India makes it an important commercial and strategical center, which fact has induced the government to fortify it with strong works. A wall with a thickness of from ten to sixteen feet, a height of twenty-five feet, and a length of four miles has been built around it. A strong fortress is located two miles north on a precipitous rock, which has proven of much utility against the attacks of invaders. Few modern conveniences have been introduced. Excellent bazaars are maintained by numerous Persian and Hindu merchants. It contains the tomb of Ahmed Shah. The manufactures include earthenware, clothing, jewelry, shawls, and utensils. It is thought that Alexander the Great founded the city, though it appears to be entirely of Persian origin. Population, 1926, 62,385.

KANDY (kän′dē), a town in the island of Ceylon, located on an elevated plain, about eighty miles from Colombo. It has railway facilities, electric lights, and several large buildings occupied by the government. Near it are the famous botannical gardens of Peradenia. It contains the palace of its former kings and has several ancient monuments and Buddhist temples. Population, 1926, 26,625.

KANE, a borough of Pennsylvania, in McKean County, 95 miles southeast of Erie, on the Pennsylvania, the Baltimore and Ohio, and other railroads. The surrounding country produces oil and natural gas. Among the manufactures are glass, brushes, machinery, cigars, and lumber products. It has a healthful climate and is a favorite summer resort. Population, 1900, 5,296; in 1920, 7,283.

KANE, Elisha Kent, Arctic explorer and scientist, born in Philadelphia, Pa., Feb. 3, 1820; died in Havana, Cuba, Feb. 6, 1857. He graduated from the University of Pennsylvania in 1842, when he received a doctor's degree, and the next year entered the United States navy as a surgeon. In that capacity he served on the *Brandywine,* which carried Webster as United States minister to China, and while on the trip to the East he visited numerous countries of Eurasia. He returned to America in 1846, but soon after sailed under government orders to Africa. In 1850 he served as surveyor of the Gulf of Mexico for the United States government, and joined the Grinnell expedition the same year for the purpose of making a search for Sir John Franklin.



ELISHA K. KANE.

Kane was led to believe by observations made while on this tour that there is an open sea in the vicinity of the North Pole, and, for the purpose of testing this belief, he organized an expedition and sailed in May, 1853, from New York in the *Advance.* On reaching 87° 43′ north latitude the ship was frozen in the sea of ice for 21 months and after many hardships and privations the vessel was abandoned. After traveling in boats and sledges a distance of 1,300 miles, he reached Greenland, and in November, 1855, returned to New York. Being much impaired in health, he sailed on a recruiting tour to Cuba, where he died. Knowledge of the Arctic regions was greatly extended by accounts of Kane's two expeditions, and he was awarded a gold medal by Congress. His publications include "Narrative of the Expedition in Search of Sir John Franklin" and "Second Grinnell Expedition in Search of Sir John Franklin."

KANGAROO (kăn̠-gȧ-rōō′), a species of herbivorous quadrupeds native to Australia, Tasmania, and New Guinea. The kangaroos were first made known to the Europeans by Captain Cook in 1770. They are distinguished by long hind legs, small fore legs, a huge tail, a small, deerlike head, and large ears. When standing erect, they are about the height of a man. They spring from ten to fifteen feet by means of the hind legs and tail, and are able to resist an attack with much skill and fury, though they have a timid disposition and are easily domesticated. The principal food is grass and other vegetable forms. Owing to the consumption of large areas of grass by herds of kangaroos, they have been hunted for destruction, but also for their skins, which are valuable in the manufacture of gloves and shoes. A peculiar pouch or marsupium is attached to the lower part of the body of the female, in which the nipple of the mammary glands open, and serve for the protection of the immaturely born young for a period of about eight months. The flesh of these animals is prized for food, resembling venison, while the tail is a favorite article for soup. Many species of kangaroos have been described, of which the *great kangaroo* described in this is the best known. Other species include the *red kangaroo, brush kangaroo,* and *agile kangaroo.* The kangaroo rat and kangaroo bear are other marsupials found in Australia and New South Wales.

AUSTRALIAN KANGAROO.

KANGAROO ISLAND, an island at the entrance of Saint Vincent Gulf, South Australia, about 102 miles southwest of Adelaide. It is separated from the mainland by Investigator Strait. The surface is barren and the island is valuable mainly for its fisheries. The area is 1,675 square miles.

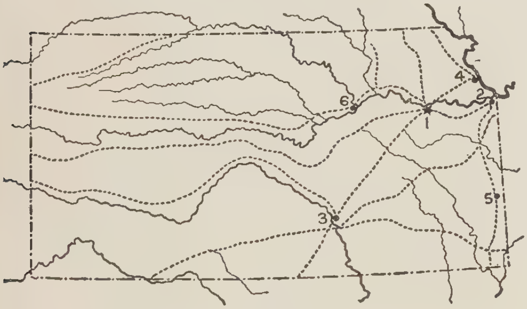
KANKAKEE (kăn̤-kȧ-kē′), a city in Illinois, county seat of Kankakee County, on the Kankakee River, which supplies an abundance of water power. It is on several electric railways, the Illinois Central, the Cleveland, Cincinnati, Chicago and Saint Louis, and other railroads. The noteworthy buildings include the high school, the county courthouse, the public library, the Y. M. C. A. building, and Saint Viateur's College. It is the seat of the Eastern Illinois Hospital for the Insane. The surrounding country is agricultural and fruit growing and has valuable deposits of limestone. Among the manufactures are clothing, flour, ironware, nails, machinery, and cigars. It has street railways, electric lights, pavements, and a sewerage system. The place was settled in 1853 and incorporated the next year. Population, 1920, 16,721.

KANKAKEE, a river of the United States, rising near the northern boundary of Indiana. It has a general course toward the west until it reaches Waldron, Ill., where it is joined by the Iroquois, after which it flows toward the northwest until it joins the Des Plaines to form the Illinois River. The valley ot the Kankakee is highly fertile. Kankakee, in Illinois, is the principal city on its banks.

KANSAS (kăn′za̤s), a central state of the United States, situated in the geographical center of the Union, popularly called the *Sunflower State.* It is bounded on the north by Nebraska, east by Missouri, south by Oklahoma, and west by Colorado. In shape it is rectangular, with a length of 410 miles from east to west and a breadth of 210 miles from north to south. Its geographical position is between 94° 37′ and 102° west longitude. In latitude it extends from the 37th to the 40th parallels. The area is 82,080 square miles, being the tenth State in size.

Description. The State consists largely of an undulating plain that slopes toward the southeast, and lies within the Great Plains which extend from the Missouri River to the Rocky Mountains. The surface rises gradually from the eastern border, where the altitude is 750 feet, to a height of 3,875 feet on the western border. Sherman County, in the northwestern part, is the highest point in the State, having an altitude of 4,425 feet. Fertile valleys with belts of timber extend along the streams. The rivers of the eastern part are characterized by bluffs that rise from 100 to 200 feet above the valleys. The average altitude is about 2,000 feet above sea level, which is the height of a line passing a little west of the center. Though the surface is quite elevated, none of the eminences rises more than 500 feet above the general level. A sandy region about 100 miles in length is located in the southwestern part, south of the Arkansas River.

None of the rivers is navigable, except the Missouri, which forms the northeastern boundary. All of the streams belong to the Mississippi system, and the drainage is principally by the Kansas River into the Missouri and the Arkansas into the Mississippi. The northern half of the State is drained by the Kansas and its tributaries. The Arkansas drains most of the remainder, flowing eastward to about the south central part, where it forms a bold curve and after a general course toward the southeast passes the border into Oklahoma. The Cimarron, a tributary of the Arkansas, drains the southwestern part. Other tributaries of the Arkansas include the Neosho and the Verdigris. The chief tributaries of the Kansas are the Republican, Smoky Hill, Solomon, Saline, and Big Blue rivers. While timber is found along most of the streams and water courses, the forests are most extensive in the eastern portion.



KANSAS.

1, Topeka; 2, Kansas City; 3, Wichita; 4, Leavenworth; 5, Pittsburg; 6, Junction City. Dotted lines show chief railroads.

The climate is agreeable and is marked by windy but usually mild winters. The summers are tempered by breezes and the nights are refreshing and cool, except in the hottest part of the year, when they sometimes become quite warm. Owing to limited rainfall in the extreme west, that portion is not so favorable to the cultivation of cereals as the other parts of the State, though the soil contains marked elements of fertility. Rains fall most largely from April to July, which is the principal growing season, and the mean rainfall for the State is 27 inches. In the eastern part it is about 35 inches, whence it decreases toward the western border, where it ranges from 12 to 20 inches. In the north the mean annual temperature is 52°, whence it rises gradually toward the south, where it is 58°. Though snow falls in the winter, it does not lie on the ground a great length of time. A large portion of Kansas was formerly covered with the so-called buffalo grass, but this prevails at present only in the western portion, while the valleys are covered with an excellent and abundant growth of blue-stem and other bladed grasses valuable for hay and pasture.

Mining. The mining industry is centered largely in the southeastern part. Lead and zinc are mined in the vicinity of Galena, and the output is smelted in works that utilize fuel products obtained within the State. In the output of coal Kansas ranks third among the states west of the Mississippi River, and the yield has increased steadily for several decades. Cherokee and Crawford counties are located in the center of a large coal field. Allen County is noted for its output of natural gas and mineral oil. The yield of petroleum is about 31,125,000 barrels per year, and the output of coal is about 4,750,000 tons. Large quantities of salt are obtained in the central portion. The most important gas deposits are in the vicinity of Iola and Independence, and much of the output is utilized in smelting and various manufacturing enterprises. Workable quantities of gypsum, red and yellow ocher, fire and brick clays, and stone suitable for construction and monuments are obtained in many localities.

Agriculture. Farming was formerly confined chiefly to the eastern half of the State, but it now extends to the western border. This has been made possible in part through irrigation canals, but mainly by introducing plants suitable to an arid climate, and by the adoption of a system of farming calculated to aid in retaining moisture in the cultivated lands. About 80 per cent. of the surface is utilized in farming, and the average size of farms is about 240 acres. In the output of winter wheat the State holds first rank. In the production of hay and corn it usually holds fourth rank. Corn is grown most extensively in the east, where the climate and rainfall are peculiarly favorable. Other crops grown include barley, oats, potatoes, vegetables, flax, and fruits. It holds high rank in the production of apples, tobacco, sugar beets, broom corn, and castor beans. Alfalfa yields abundantly throughout the State, while timothy and clover are grown more successfully in the east. Among the leading crops of the western part are alfalfa, kafir corn, millet, wheat, rye, and vegetables.

Large interests are vested in stock raising. Cattle are reared both for meat and dairy purposes, and butter and cheese making are important industries. Horses, mules, and swine are raised most extensively in the east, while the grazing lands of the west have contributed to the development of ranches for rearing sheep, cattle, and horses. Kansas City is one of the largest slaughtering centers of the United States, and much of the stock produced in the State is transported to that market.

Manufactures. The manufacturing enterprises have grown in importance with every decade, but are not developed to the extent of their possibilities. Kansas City, on the eastern border, has large slaughtering and meat-packing establishments, and is a center for the manufacture of soap, candles, and leather. The products next in importance are flour and meal, which are produced in nearly all parts of the State. Condensed milk, butter, and cheese are exported in large quantities. The presence of vast deposits of natural gas, petroleum, and bituminous coal has caused a large increase in the smelting and refining industries. Other manufactures embrace cigars, brick and tile, glass, beet sugar, brooms, railway cars, earthenware, wagons, radios, bread, automobile accessories, and farming machinery.

Transportation. River transportation is confined wholly to the Missouri. Railroad building has been promoted extensively since 1875, and the State is favorably situated with reference to transcontinental traffic. It is crossed by a number of trunk lines, several of which furnish direct communication with ports on the Great Lakes and the Gulf of Mexico. The eastern part is particularly favored in having numerous branches and electric railways. The total lines of steam railroads aggregate 9,391 miles. All of the larger cites are important as railway centers, especially Topeka, Kansas City, Wichita, Coffeyville, Fort Scott, Hutchinson, and Pittsburg. The telephone, telegraph, and electric railways are utilized extensively. Large quantities of live stock, fruit, wheat, wool, packed meats, corn, and dairy products are exported. The imports consist chiefly of merchandise, clothing, and machinery.

Government. The present constitution came into effect in 1861. It vests the executive power in a governor, lieutenant governor, auditor, treasurer, superintendent of public instruction, secretary of State, attorney-general, secretary of horticulture, superintendent of insurance, and secretary of labor statistics, all of whom are elected for two years. In addition there are the board of railroad commissioners, the State agricultural society, the free employment agency, the board of control of charitable institutions, and the executive council, the last mentioned being constituted of the Governor and six other State officials. The Legislature is composed of the senate and the house of representatives, the former having 40 and the latter 125 members. The senators are elected for four and the representatives for two years, and the legislative sessions are held biennially. A supreme court of seven judges elected for three years is the highest judicial tribunal. Subordinate to it are the district judges, who preside over the courts in districts made up of several counties. The judges of the supreme court serve for six years, while the district judges are elected for four years. Each county has a clerk of the district court and a probate judge. Justices of the peace are elected in the townships.

Education. Kansas has a high rank in educational affairs among the states. It contains the highest proportion of native born citizens. In 1920 the illiterate population was only 1.6 per cent. of the inhabitants. This result was attained largely because of a compulsory attendance law and the excellent system of public schools maintained in the State. A large majority of the inhabitants reside in rural districts, hence the elementary schools are well distributed in all the more densely populated sections. All the towns and cities have high schools, which are graded under a course of study prepared by the state department, and the public system terminates in the University of Kansas, situated at Lawrence. The State normal school is at Emporia, at which a large proportion of the teachers receive training, and a number of private normal schools and departments of other institutions furnish special courses for those who desire to enter the profession of teaching. Licenses are granted to teachers on the basis of training and experience, ranging from those issued in the counties to the State certificates granted by the State board of examiners. The average length of the school year is a little less than eight months, but all of the cities and many rural districts have nine months per year.

The State has many private institutions of higher learning. These include Washburn College, at Topeka; Baker University, Baldwin; Bethany College, Lindsborg; Friends' University, Wichita; Ottawa University, Ottawa; Fairmount College, Wichita; Lane University, Lecompton; Salina Wesleyan University; Salina; Southwestern Kansas College, Winfield; and Saint Benedict's College, Atchison. Kansas City has an institution for the blind. Olathe has a school for the deaf and dumb, and Leavenworth has a national soldiers' home. The soldiers' orphans' home is at Atchison, the State penitentiary is at Lansing, and the industrial reformatory is at Hutchinson. Beloit has an industrial school for girls. Topeka has a reform school for boys, and Leavenworth has a Federal prison. Osawatamie is the seat of an insane asylum.

Inhabitants. The inhabitants consist largely of American-born citizens, many of whom immigrated from states farther east. The per cent. of foreign-born is smaller than that in most states of the Mississippi Valley. The urban population is comparatively small, owing to the fact that the State has no large cities, only one of them having more than 100,000 inhabitants. Topeka, on the Kansas River, is the capital. Other cities include Kansas City, Leavenworth, Wichita, Atchison, Pittsburg, Lawrence, Fort Scott, Parsons, Hutchinson, Emporia, Coffeyville, and Independence. In 1900 the State had a population of 1,470,495. Of this number 54,176 were colored inhabitants, including 2,130 Indians and 52,003 Negroes. In 1905 the population was 1,544,968; in 1925, 1,812,986.

History. The larger part of Kansas constituted a portion of the Louisiana Purchase acquired from France in 1803, but the region lying south of the Arkansas River and west of longitude 100° W. was ceded in 1850 by Texas to the United States. It was first visited in 1541 by Coronado, a Spaniard, and was partly explored in 1819-20 by Major Long of the United States army. The region was a part of Missouri Territory until 1821, and then remained unorganized until the Kansas-Nebraska bill, in 1854, formed the Territory of Kansas, which then included part of the present State of Colorado. After much controversy between opposing parties to make Kansas a free or a slave State, it was admitted to the Union on Jan. 29, 1861, under the Wyandotte Constitution, prohibiting slavery. Prior to its admission occurred the celebrated border war, resulting from an attempt of people from the Northern and Southern states to influence its final position as to slavery.

Kansas furnished a larger proportion of men for the Civil War than any other State. It was not a direct battle ground, but Quantrell's guerrillas invaded the State from Missouri and captured Lawrence, where a large number of citizens were killed. About 40,000 Negroes migrated from the South into Kansas in 1878 and 1880. Prohibition became incorporated in the general laws shortly after 1880, after a period of extended discussion. It continues to attract considerable attention from time to time.

KANSAS, University of, a coeducational State institution at Lawrence, Kansas, established in 1864. It comprises the schools of pharmacy, medicine, liberal arts, law, engineering, and fine arts. With it are included a graduate school and the University Geological Survey. Admittance is free to all residents of Kansas, and students from other states are required to pay a small tuition. The institution has a library of 170,000 volumes, property valued at $5,590,269, and an attendance of 5,000 students. It is governed by a board of nine regents, appointed by the Governor of the State. The institution has a collection of natural history valued over $300,000.

KANSAS CITY, the largest city in Kansas, county seat of Wyandotte County, separated from Kansas City, Mo., by the State boundary. It is on the Union Pacific, the Chicago, Rock Island and Pacific, the Missouri Pacific, the Atchison, Topeka and Santa Fé, and other railroads. The site extends to both sides of the Kansas River, at its confluence with the Missouri and includes an area of twenty-four square miles. A part of the city is on the low bottom of the rivers, but the large part extends along the slopes and over the bluffs. Several bridges across the Kansas River unite the two parts of the city. It is also closely connected with Kansas City, Mo., by well-graded streets and a system of electric railways. The streets are well paved with brick and asphalt.

Kansas City, Kan., is the seat of Kansas City University, a Methodist Episcopal institution. It has a fine Carnegie library valued at$200,000. Other noteworthy buildings include the public high school, the county courthouse, the State institution for the blind, and many churches and schools. The live stock business ranks as the second largest in the world. It is one of the most important packing-house centers in the United States, and those located in the city have given a world-wide reputation to the two cities. It has many large grain elevators and numerous manufacturing enterprises. Among the general manufactures are soap, leather, flour, candles, hardware, and machinery. Kansas City was chartered in 1886, when it was formed of Armstrong, Wyandotte, Armourdale, and several other villages. Population, 1925, 116,053.

KANSAS CITY, the second city in Missouri, in Jackson County, on the south bank of the Missouri River, separated by the State boundry from Kansas City, Kans., with which it is connected by three viaducts. The Kansas River flows into the Missouri at the city. It is one of the most important railroad centers in the Mississippi Valley, being on the Chicago and Alton, the Wabash, the Chicago Great Western, the Atchison, Topeka and Santa Fé, the Chicago, Rock Island and Pacific, the Kansas City Southern, the Chicago, Milwaukee and Saint Paul, the Chicago, Burlington and Quincy, the Missouri Pacific and other railroads. All of the lines use in common a large union depot, and a terminal circular railway furnishes intercommunication among the different lines. Three great bridges have been constructed across the Missouri River, including a large bridge which furnishes communication with North Kansas City. A fine system of electric street railways has lines to all parts of the city, and suburban and interurban transit is furnished by branches and lines extending to various points in Kansas and Missouri. Additional transportation facilities are furnished by motor trucks and bus lines.

The streets are broad, regularly platted, and improved by asphalt, brick and stone paving. The site of the city is on a rolling and rather uneven tract of land, but it has been greatly improved and beautified by grading and leveling. Many of the buildings in the business section are from ten to eighteen stories high. The construction is modern and of substantial material, mostly of stone. Among the noteworthy buildings are the Federal courthouse, the city hall, the Federal Reserve Bank, the Union Station, the Board of Trade, the Convention Hall, the art gallery and museum, the public library, and the Y. M. C. A. building. It has many tall structures and office buildings, such as the Scarritt, the Waldheim, the Long, the Commerce, and the New York Life buildings. The public institutions include the Kansas City School of Law, Western Dental College, Kansas City

College of Pharmacy, and a number of hospitals. Among the leading resorts are Holmes Square, and North Terrace, Swope, and Washington parks. All the leading Christian denominations have commodious church buildings. Many fine public and private schools are maintained.

Kansas City is a distributing point for a large region in the Southwest and has an extensive wholesale and jobbing trade. It is important as a market for grain and live stock, and contains extensive mills and elevators. The milling products, nicluding flour, oatmeal, and cornmeal, take rank as the most important manufactures within the city. Other products include clothing, soap, radios, confectionery, machinery, leather, hardware, brick and tile, and foundry products. The first settlement on its site was made by French fur traders in 1821 and it was platted as a town in 1838. It was incorporated in 1853, when it was known as Westport Landing. The early growth of the city is due to the navigation facilities of the Missouri River, by which it was built up before the construction of railways. It received its first impetus as a commercial city in 1865, when it was reached by the Missouri Pacific Railroad. In 1903 it suffered much damage by an overflow of the Missouri River. Population, 1920, 324,410.

KANSAS-NEBRASKA BILL, the name of a bill introduced in the Congress of the United States by Stephen A. Douglas in 1854, which was passed in the same year. It is so named because it separated and organized the territories of Kansas and Nebraska, and its importance is in the fact that it practically repealed the Missouri Compromise. It embodies the *squatter sovereignty* idea of Douglas, in that the question of slavery in the two territories was to be settled by the people residing therein, and if the people decided to adopt slavery the fugitive slave law was to apply. Nebraska was easily settled as a free territory, but the passage of the bill was the occasion of much trouble in Kansas. It was one of the causes that hastened the Civil War.

KANSAS RIVER, a river of Kansas, formed in Dickinson County by the union of the Solomon and Smoky Hill rivers. It is joined near Junction City by the Republican and near Manhattan by the Big Blue River. After an easterly course of about 200 miles, it joins the Missouri at Kansas City. The valley of the Kansas River is highly fertile, producing large quantities of fruits and cereals.

KANSAS STATE NORMAL SCHOOL, institution of learning at Emporia, Kas., established by an act of the Legislature in 1863. In 1901 the Western Branch State Normal School was organized at Hays and two years later the Manual Training Auxiliary was founded at Pittsburg. The management of these schools is by law vested in one board of regents and the president of the normal school at Emporia is president of the three schools. These institutions are conducted for the instruction of persons in the art of teaching all grades of work from the kindergarten to the high school. On completion of two, three, and four years of work, respectively, state certificates for one year, three years, and life are granted. An advanced course of collegiate grade at Emporia confers the degree of bachelor of arts and education. The special features at Emporia are kindergarten and primary methods, the school of music, the practice school, the commercial department, and the advanced college course. The library of 85,000 volumes with its new building and equipment offers good opportunity for the practical training of teachers in primary methods. Among the special organizations for students are the literary societies, debating clubs for young men and women, the Y. M. and Y. W. C. A., the music society, the orchestra, and classes in chorus work.

In addition to the main building, there are separate buildings for the library, the training school, the gymnasium, the hospital, the boiler house, and the science department. Special attention is given to athletics, football, baseball, golf, tennis, and other out-of-door sports. The teaching force for the three schools is composed of 125 instructors, with a student attendance of approximately 3,700 students.

KANT (känt), **Immanuel,** educator and metaphysician, born in Königsberg, Germany, April 22, 1724; died there Feb. 12, 1804. He was the son of a saddler and strap maker, graduated at the university of his native town, where he took a degree in 1755, and entered upon the profession of a teacher. In 1770 he was elected professor of logic and metaphysics at the University of Königsberg, and later also taught natural theology, moral philosophy, physical geography, and natural law. Like Socrates, he was fond of reading, but seldom left his native town more than forty miles. He never married and his private life was uneventful. Although austere in his principles of morality, he was kind in manners and was regarded of unimpeachable honor and veracity. As a teacher, he held that pupils should be induced to form the habit of self-reflection for the purpose of enlarging mental power.

IMMANUEL KANT.

The germ of his theory lies in the proposition that before any knowledge can be developed concerning the object of cognition, the student must acquire the faculty of cognition and clearly realize the sources of knowledge it contains. He held that sense, understanding, and reason are the three original faculties by which we acquire knowledge. He regarded sense a passive and receptive faculty for the reason that it necessarily depends upon space and time. On the other hand, he looked upon understanding, or the active faculty, as consisting of the power of forming conceptions by categories, such as causality, unity, and plurality, these categories being applied to objects of experience through the medium of the two essentials of perception, space, and time. According to his view, reason is the power of forming ideas and constitutes the higher degree of mental spontaneity. In teaching and lecturing it was his habit to fix his eye upon one or two students, and by their attitude determine whether or not his instruction was assimilated and understood. Duty and obligation he considered the supreme governing idea in religion, and left but little play for the inclination and feelings of the individual.

The writings and lectures of Kant cover a wide range of subjects, and collectively constitute an important series of productions. His works on pedagogy are of especial interest, and have given tone and tendency to systems of education in many countries. The most important of his writings include "Treatise of the Practical Reason," "Criticism of the Pure Reason," "Foundation of Metaphysics and Ethics," "Treatise of the Power of Judgment," "Observations Regarding Feelings of Beauty and Order," "Metaphysical Elements of Science," and "Anthropology in a Pragmatic Point of View."

KAOLIN (kā'ō-lĭn), a hydrated silicate of alumina, so named by the Chinese from a hill in China called Kaoling. It is a soft clay formed by the decomposition of rocks and contains mica, feldspar, and quartz. This product is now obtained in various parts of Germany, France, England, and the United States. Deposits of considerable extent occur at Schneeberg, in Saxony; at Cornwall, in England; and in various parts of Georgia, Pennsylvania, and Vermont. The proportion of silica to alumina varies in different countries. It is used extensively in the manufacture of porcelain and white earthenware and in paper making. It somewhat resembles mortar in the natural state, but becomes pure white when burned.

KARAKORUM MOUNTAINS (kä-rȧ-kō'rŭm), an elevated range in the central part of Asia, extending from the Himalayas into Kashmir and Eastern Turkestan. These mountains terminate at the Pamir, where they merge into the Hindu Kush. Mount Godwin-Austin, elevated 28,278 feet above the sea, is the culminating peak and one of the highest summits in the world. The Karakorum Pass is one of many lofty passes that connect the intervening valleys.

KARAMZIN (kȧ-rȧm-zēn'), **Nicholas Michaelovitch,** historian and poet, born in Mikhailovka, in the government of Orenburg, Russia, Dec. 12, 1765; died June 3, 1826. He was the son of an officer in the army and was designed for a military career, but his aptness and preference for literary work caused him to go for study to Moscow. In 1789 he traveled extensively in Switzerland, Germany, France, and England. His experience in these travels was published under the title, "Letters of a Russian Traveler," which was widely read and met with an enthusiastic reception. In 1802 he became the editor of the *European Messenger* and shortly after begun his great "History of the Russian Empire." To accomplish this work he secluded himself for several years and in 1816 removed to Saint Petersburg, where he was granted a salary by the government. He completed eleven volumes, his work terminating with the accession of Michael Romanoff (1596-1645), the founder of the reigning dynasty of Russia, who ascended the throne in 1613.

KARIKAL (kä-rē-käl'), a French possession on the Coromandel Coast of India, in the British district of Kanjore, 150 miles south of Madras. It has an area of 63 square miles and is inhabited chiefly by natives. This possession was made French territory in 1759, but was captured by the English in the early part of the 19th century, and was restored to the French in 1814. It has considerable trade with France and the French colonies, chiefly in rice and fruit. Karikal, the chief town, in 1906, had a population of 17,511. Population, 1922, 71,554.

KARLSBAD. See **Carlsbad.**

KARLSRUHE. See **Carlsruhe.**

KASCHAU (kä'shou), or **Kassa,** a city of Czecho-Slovakia, capital of the county of Adauj-Torna, 168 miles northeast of Budapest. It is located on the Hernád River, has railroad conveniences, and its streets are regularly platted. The surrounding country produces large quantities of wine and cereals. It has a fine Gothic cathedral, a royal law school, a coeducational seminary for teachers, and several schools and Protestant churches. The manufactures include flour, paper, cigars, spirits, and clothing. In 1241 the region was settled by German colonists. It was the scene of a battle between the Austrians and the Hungarians in 1849, in which the latter were defeated. Population, 1922, 43,150.

KASHAN (kä-shän'), a city of Persia, in a province of the same name, 120 miles south of Teheran. It has public baths, a Mohammedan college, and numerous mosques and bazaars. The manufactures include faïence, jewelry, and silk and woolen textiles. Population, 30,500.

KASHGAR (käsh-gär'), a city of Asia, in East Turkestan, on the Kashgar River. It is surrounded by mud walls and the new part of the town is defended by a citadel. The manufactures consist chiefly of textiles, carpets, and jewelry. It has considerable trade and is the seat of several native schools and mosques. Population, 65,808.

KASHMIR. See **Cashmere.**

KASKASKIA (kăs-kăs'kĭ-ȧ), a river in Illinois, rises in Champaign County, flows southeast and enters the Mississippi at Chester. It has a length of 200 miles and is navigable for about 50 miles. The first settlement in the State was founded by the French on the Kaskaskia River, about seven miles from its mouth, in 1680. Kaskaskia was the first capital of Illinois. It is now a small post village. Population, 1900, 177; in 1920, 142.

KASSON (kăs'sŭn), **John Adams,** public man, born in Charlotte, Vt., Jan. 11, 1822. He descended from Scotch-Irish parents, graduated at the University of Vermont in 1842, and began his career as a school-teacher. Subsequently he studied law in a private office and practiced in Saint Louis, and in 1857 removed to Iowa, where he became prominent in politics as a Republican. Lincoln appointed him first assistant postmaster-general in 1861, and the following year he was elected to Congress and was reelected in 1864, 1872, and 1874. He was made a commissioner to the first international postal congress at Paris in 1863, and subsequently was special commissioner to conclude postal treaties with six European nations. In 1877 he was made minister to Austria and served until 1881, when he returned to the United States and was elected to Congress and was reëlected in 1883. President Arthur made him minister to Germany in 1884, and while there he served as a representative in the International Congo Conference at Berlin. He was president of the International Centennial Commission at Philadelphia in 1887, and chairman of the commission sent by the United States to the International Samoan Conference at Berlin. In 1897 he was made commissioner plenipotentiary to negotiate the reciprocity treaty under the Dingley Act, and the following year served as member of the American-Canadian High Joint Commission. He published "History of the Formation of the United States Constitution." He died May 18, 1910.

KATAHDIN (kȧ-tä'dĭn), or **Ktaadn,** a celebrated mountain peak, the most elevated in Maine. It is situated in the central part of the State, about eighty miles west of Bangor, and has a height of 5,385 feet above sea level.

KATRINE (kăt'rĭn), **Loch,** a lake of Scotland, in Perthshire, five miles east of Loch Lomond. It is eight miles long and about two miles wide, and is visited annually by many tourists. Ellen's Isle, located in this lake, is the scene of Scott's "Lady of the Lake."

KATTEGAT. See **Cattegat.**

KATYDID (kā'tȳ-dĭd), a pale green insect, about an inch and a half long, allied to the grasshopper. Several widely distributed species have been studied. The name is an imitation of their peculiar note heard at night, which is caused by the friction of membranes attached to the covers of the wings. It is made only by the males, being a call to the noiseless females.

KAUFFMAN (kouf'män), **Angelica,** German artist and singer, born in Schwartzenberg, near Bregenz, in Tyrol, Oct. 30, 1741; died Nov. 5, 1807. Her early disposition to execute portraits caused her father to take her to Milan, where she studied the great masters. Later she visited various parts of Italy and studied at Rome, Venice, and Bologna. In 1765 she accompanied Lady Wentworth to London, where she secured a reputation as a painter of portraits and historic pictures. She married the Italian painter, Antonio Zucchi, in 1781, and returned to Rome, where she produced many excellent works of art. As a singer she took high rank and appeared in the society of nobles. Her chief paintings include "The Hermitage," "Psyche Drying Cupid's Tears," "Ariadne and Theseus," "Christ and the Woman of Samaria," and "Virtue Directed by Prudence to Withstand the Solicitations of Folly."

KAUKAUNA (kạ-kạ'nȧ), a city of Wisconsin, in Outagamie County, on the Fox River, 22 miles above Green Bay. It is on the Chicago and Northwestern Railroad, which maintains extensive shops at this place. Other industries include brick and tile works, flouring mills, and paper mills. It has electric lighting, waterworks, and several fine schools. Water power for manufacturing is obtained from the Fox River. Population, 1905, 4,991; in 1920, 7,213.

KAULBACH (koul'bäk), **Wilhelm von,** historical painter, born at Arolsen, Germany, Oct. 15, 1805; died Apr. 7, 1874. He studied at Düsseldorf and Munich, and decorated the Odeon in the latter city with frescoes of Apollo and the Muses. In 1839 he went to Rome to make an extensive study of classic paintings and on returning to Germany decorated the hall of the Museum of Berlin. He was made director of the Munich Academy in 1849 and resided in that city until his death. Kaulbach is classed with the greatest painters of modern Germany. His historical works are exceptionally fine in coloring and outline. Among his noted paintings are "The Crusaders Before Jerusalem," "The Fall of Babel," "The Battle of the Huns," "Destruction of Jerusalem by Titus," "The Madhouse," and "The Battle of Salamis."

KAUNITZ (kou'nĭts), **Wenzel Anton, Prince von,** statesman and diplomat, born in Vienna, Austria, Feb. 2, 1711; died June 27, 1794. He entered upon a public career under Charles VI., and by his successor, Maria Theresa, was sent on embassies to Rome, Turin, and Florence. In 1744 he was appointed minister to the court of the Austrian Netherlands. He represented Austria at the Congress of Aix-la-Chapelle, in 1748, where he demonstrated much ability as a diplomat, and soon after became minister of state. In 1750-52 he served as Austrian ambassador at Paris, concluding in the meantime an alliance between Austria and France. He was made chancellor of Austria in 1756, in which position he displayed extraordinary influence for more than forty years, and sought to arrest the rise of the Prussian power by cultivating the friendship of Russia and France. With the ascension of Joseph II. his influence waned, and he resigned his office in 1792 when Francis II. ascended the throne. His long political career was marked by a decided interest in strengthening the internal affairs of the German states, but giving preferences to Austria as against Prussia. In his efforts he gave much thought to the development of education, agriculture, and commerce.

KAW (kạ), or **Kansa,** a tribe of Sioux Indians who formerly occupied the lower valley of the Kansas River, in Kansas. They speak a dialect of the Osage language. At the beginning of the 19th century they numbered about 1,300, but at present not more than 200 full-bloods remain. In 1846 they were removed to Oklahoma, where they occupy a reservation with the Osage Indians.

KAZAN (kȧ-zän'y'), the chief city and capital of the Russian government of Kazan, on the Kazanka River, near its junction with the Volga. It is strongly fortified. The industries include tanneries, soap factories, machine shops, and establishments for wool combing, weaving, and dyeing. Near it is a government dockyard. Its convenient navigation and railroad facilities make it an important market for flour, hemp, timber, and cereals. As an educational center it ranks among the most important of Russia. The university was founded by Alexander I. in 1804. It has an extensive observatory, botanical gardens, and a library of 100,000 volumes, and is attended by 1,000 students. Near the city are the shipyards in which Peter the Great built the Russian fleet, which became famous on the Caspian Sea during his reign. Kazan was founded in the 13th century, but originally the town was thirty miles farther east than the present location. It was the capital of the khanate of Kazan under the Tartars. The Russians under Ivan the Terrible captured it in 1552 after a prolonged siege. Population, 1921, 162,486.

KEAN, Charles John, actor, second son of Edmund Kean, born at Waterford, Ireland, Jan. 18, 1811; died Jan. 22, 1868. He studied at Eaton and made his début at Drury Lane in 1827. In 1830 he made a tour of Canada and the United States, appearing with much success as *Young Norval* in "Douglas." For some years he toured with Ellen Tree, to whom he was married in 1842. In 1850 he became manager of the Princess's Theater, which he conducted with much success until 1859, presenting many of the Shakespearean plays. He made a tour of the world in 1868, visiting Jamaica, Australia, Canada, and the United States. His death occurred at Chelsea, England.

KEAN, Edmund, actor, born in London, England, March 17, 1787; died at Richmond, May 15, 1833. He was the son of Aaron Kean, a stage carpenter, and father of Charles John Kean, a noted tragedian. When Edmund was a mere boy, he exhibited evidences of natural dramatic genius, and, after extended training, appeared in the character of *Shylock* at the Drury Lane Theater, London, in 1814. Later he played with equal success as *Othello, Macbeth, Hamlet,* and other characters of Shakespeare's plays. Subsequently he made an extended visit to America, returned to England in 1826, and as before enjoyed much popularity, especially in the character of *Shylock.* His last appearance as an actor was at Covent Garden in 1833, where he was taken with sudden insensibility, brought on largely by irregular habits.

KEARNEY (kär'nĭ), a city in Nebraska, county seat of Buffalo County, on the Platte River, about 125 miles west of Lincoln. It is on the Union Pacific, the Burlington System, and other railroads, and is surrounded by a fertile stock and agricultural country. The noteworthy buildings include the county courthouse, the high school, the public library, the city hall, the opera house, and the Nebraska Industrial School for Boys. Lake Kearney, which covers about forty acres, is near the city. Among the manufactures are brick, machinery, canned articles of food, crackers, cigars, and flour. The municipal facilities include systems of sewerage and waterworks. Kearney was settled in 1871 and incorporated in 1872. Population, 1900, 5,634; in 1920, 7,702.

KEARNY, a town of Hudson County, New Jersey, on the Passaic River, opposite Newark. It is on the Erie and other railroads and is popular as a residential center. The chief buildings include the townhall, an Italian orphan asylum, a State soldiers' home, the public library, and the high school. It has electric street railway connections with Jersey City, is important as a manufacturing center, and has a growing trade in merchandise. Kearny was first settled by Germans, when it was known as New Barbadoes, and it was incorporated under its present name in 1871. Population, 1920, 26,724.

KEARNY, Lawrence, naval officer, born at Perth Amboy, N. J., Nov. 30, 1789; died there Nov. 29, 1868. In 1807 he entered the navy as a midshipman, serving in that capacity on the frigates *Constitution* and *President,* and became a lieutenant in 1813. During the War of 1812 he won much distinction against the British. In 1821 he was sent to clear the West Indies and the Gulf of Mexico of piratical hordes. He was promoted to the rank of captain in 1832, secured commercial concessions from China in 1841, and in 1866 was made commodore and placed on the retired list.

KEARNY, Philip, soldier, born in New York City, June 2, 1815; slain at Chantilly, Va., Sept. 1, 1862. In 1837 he entered the army and two years later went to Europe to study French military tactics. After attending the cavalry school at Saumur, he enlisted in the French army, with which he rendered service during the campaigns in Algeria. He returned to America in 1840, was soon after attached to the staff of General Scott, was made captain in 1846, and lost an arm during a brave assault upon the city of Mexico. Later he served in the war against the Oregon Indians. In 1859 he reëntered the service of France, and for bravery at Solferino was decorated with the cross of the Legion of Honor. At the commencement of the Civil War he returned to America, was promoted major-general, and during an assault was killed in battle. General Scott spoke of him as being the most nearly perfect soldier and bravest man he ever knew.

KEARNY, Stephen W., general, uncle of Philip Kearny, born in Newark, N. J., Aug. 30, 1794; died in Saint Louis, Oct. 31, 1848. He entered the army at the beginning of the War of 1812 as a lieutenant, was made captain the following year, and in 1846 became brigadier-general, taking possession of New Mexico at the beginning of the Mexican War. In 1847 he was appointed Governor of California. The following year he was made military Governor of Vera Cruz and the city of Mexico. He wrote "Manual for the Exercise and Manoeuvering of United States Dragoons" and several other works on military tactics.

KEARSARGE (kẽr′särj), a famous battleship of the United States, which was used for effective service in the Civil War. It was launched at Portsmouth, N. H., in 1861, and on June 19, 1864, engaged in battle the Confederate cruiser *Alabama* off the harbor of Cherbourg, France, disabling and sinking that privateer, which had destroyed a large part of the American merchant marine. In 1894 the *Kearsarge* was wrecked in the Caribbean Sea, though the officers and crew were saved. The vessel was burned by natives before a wrecking party arrived.

KEATS (kēts), **John,** poet, born in London, England, Oct. 29, 1795; died in Rome, Italy, Feb. 27, 1821. He received his education mainly at Enfield, where he attended a school under the direction of John Clarke. It is said that he had some knowledge of French and that he was a good student in Latin and Greek. He was apprenticed to a surgeon in 1810 and practiced medicine seven years. Subsequently he devoted his attention entirely to literature, beginning by contributing to Leigh Hunt's *Examiner,* and soon produced numerous poems of decided value. He contracted a cold while on a tour in the English Lake District, which caused a severe affection of the throat, and in the course of time developed into consumption. His death occurred at Rome, Italy, where he was buried near the pyramid of Caius Cestius. Among the most noteworthy of his works are "Endymion," a poetic romance, "The Eve of Saint Agnes," "Hyperion," "Isabella," and "On First Looking Into Chapman's Homer."

KEBLE (kē′b'l), **John,** clergyman and poet, born in Fairford, England, April 25, 1792; died at Bournemouth, March 29, 1866. His early education was in his native town under the direction of his father. He entered Oxford at fifteen, where he made a creditable record, and in 1816 was ordained priest. Though manifesting a desire to fill a pastoral charge, he remained at Oxford as a public examiner in the school and as tutor at Oriel College until 1823. Four years later he published a volume of religious poems entitled "The Christian Year." This book of poems had a wide circulation and went through 158 editions before 1872. Later he spent much time in laboring on the tract movement for religious reforms. His contributions include four numbers; namely, 4, 13, 40, and 89, the last of the series being Newman's tract No. 90, which appeared in 1841. His religious work, like that done in college, was marked with a high degree of ability.

KECSKEMÉT (kĕch′kĕ-māt), a town of Hungary, capital of the district of Pesth-Solt, fifty miles southeast of Budapest. It is surrounded by an agricultural and stock-growing country, and is the seat of an important annual cattle fair. The chief buildings consist of grain elevators, several churches, and a number of secondary educational institutions. Most of the inhabitants are Magyars. Population, 1922, 60,045.

KEEFER, Thomas Coltrin, civil engineer, born at Thorold, Canada, in 1821. He studied at the Upper Canadian College, Toronto, and engaged as surveyor on the Erie Canal. Subsequently he was employed on the Welland Canal, and in 1845 took charge of the Ottawa River improvements. The Dominion government employed him in 1850 to survey the rapids of the Saint Lawrence and to take measurements from that river to the headwaters of the Saint John, with the view of establishing communication by canal or railroad between the two rivers, and later he did extensive surveying for the Grand Trunk Railway Company. In 1894 he published a report on the feasibility of constructing a ship canal between the Atlantic and the Great Lakes. He was commissioner at the London Exposition in 1862 and in Paris in 1878. His publication entitled "The Philosophy of Railways" has had a wide circulation. He also published "The Influence of the Canals of Canada on Her Agriculture." He died at Ottawa, Jan. 7, 1915.

KEEL, the lower timber of a wooden ship or vessel, answering to the spine, and giving the main support to the ribs and the whole structure. In most wooden vessels an additional timber beneath is called a *false keel,* and a piece bolted to the keel on the inside is called the *keelson.* Iron vessels are arranged with entirely different parts. The keel is the first part of a ship to be built, hence the term *laying of the keel* has reference to the first work in constructing a ship.

KEELEY, Leslie E., physician, born in Saint

Lawrence County, New York, in 1836; died in Los Angeles, Cal., Feb. 21, 1900. At an early age he removed to Michigan, graduated from the Chicago Rush Medical College in 1864, and later received a degree from the University of Saint Louis. He was a surgeon in the Civil War, and in 1866 located for the general practice of medicine in Dwight, Ill. There he attained a reputation on account of his treatment of alcoholism and narcotism, both of which he regarded as diseases, and applied curative treatment in connection with social and moral agencies as auxiliary means. The medical treatment became known as the *gold cure,* owing to the use of chloride of gold as the essential drug. Subsequently many similar institutions were organized in America and Europe, which became known as the *Keeley institutes.* Those having taken treatment in the institutes maintain a national society called the Keeley League. In 1896 Doctor Keeley published a work entitled "Non-Heredity of Inebriety."

KEENE, a city in New Hampshire, county seat of Cheshire County, on the Ashuelot River, about ninety miles northwest of Boston. It is on the Boston and Maine Railroad, within ten miles of Monadnock Mountain, and is surrounded by chains of hills. The noteworthy features include a fine public library, the county courthouse, and a handsome monument dedicated to the soldiers of the Civil War. Among the manufactures are machinery, furniture, vehicles, ironware, woolen fabrics, and shoes. It has electric lights and street railways, waterworks, pavements and a system of sewerage. Keene was settled in 1734, but was known as Upper Ashuelot until 1753, when it was incorporated under its present name. Population, 1900, 9,165; in 1920, 11,210.

KEENE, Laura, actress, born in London, England, in 1820; died Nov. 4, 1873. Her real name was Mary Moss, Laura Keene being the stage name which was given to her by Charles Reade. In 1847 she married Henry Wellington Taylor and toured successfully in Australia, Canada, and the United States. In 1858 she introduced at the Olympic Theater in New York the successful comedy of "Our American Cousin," in which she was supported by Edward H. Sothern and Joseph Jefferson. While she was presenting this play at Ford's Theater in Washington, D. C., in 1865, Abraham Lincoln was assassinated. She was particularly successful in melodramatic pieces.

KEEWATIN (kē-wä′tĭn), formerly a district of Canada, extending from Manitoba and Ontario to the Arctic Archipelago. It was bounded on the north by Franklin, east by Franklin and Hudson Bay, south by Ontario and Manitoba, and west by Manitoba, Saskatchewan, and Mackenzie. The extent from north to south is 1,300 miles and the area is 756,000 square miles. Much of the surface is rugged, but it is characterized by numerous lakes, swamps, and patches of good arable land. All of the rivers drain into Hudson Bay. They include the Nelson, Severn, Churchill, and Back rivers. The English River, flowing west, and the Albany River, flowing east to James Bay, form the southern boundary. The southern half of the district is covered with a dense growth of forests, but the timber in the north is sparse and scrubby. Pine, spruce, and aspen poplar are the chief species. Gold and copper are the most important minerals, but furring is the principal commercial enterprise.

The agents of the Hudson Bay Company exercise a personal influence among the Indians and half-breed trappers, thus fulfilling to some extent the functions of a civil government. When necessary the authority of the Dominion is enforced through the efficiency of the Northwest Mounted Police, a force of constabulary upon which the maintenance of peace devolves to a large extent. As magisterial powers are exercised by the officers of the police in their several districts, the development of the region has been aided to a considerable extent by the presence of these royal officials. Small detachments are kept on patrol duty and they visit regularly every point where settlement has begun. However, the few inhabitants are found mainly in the small villages along the west coast of Hudson Bay. Keewatin was divided in 1912 and annexed to Manitoba and Ontario.

KELLER (kĕl′lẽr), **Helen Adams,** author, born in Tuscumbia, Ala., June 27, 1880. She descended from Alexander Spottswood, a colonial Governor of Virginia. At the age of nineteen months she suffered from an attack of scarlet fever, by which she was deprived of the senses of sight and hearing. At the age of eight years she was placed under the case of Anne Mansfield Sullivan, who taught her to read and write and to use the finger alphabet. Subsequently she studied under Sarah Fuller, a former student of the Horace Mann School of New York, under whose instruction she learned to talk intelligibly. In 1904 she graduated from the Radcliffe College. She contributed to a number of magazines and is the author of "The Story of My Life."

KELLERMANN (kĕl′lẽr-män), **François Christophe,** Duke of Valmy and Marshal of France, born in Strassburg, Germany, May 30, 1735; died Sept. 12, 1820. He served in the Seven Years' War as a volunteer in the French army, supported the Revolution of 1789, and in 1791 became general in Alsace. Later he distinguished himself in the French expedition to Italy, and for his service Napoleon named him successively senator, Marshal of France, and Duke of Valmy. He voted for the deposition of the emperor in 1814, and later supported the liberals in the high chamber.

KELLOGG (kĕl′lŭg), **Clara Louise,** operatic singer, born in Sumterville, S. C., in 1842; died at Elpstone, Conn., May 13, 1916. She secured her education of an artist in New York City, where she sang in the Academy of Music. Subsequently she became known in all the leading countries of the world. Her popularity is such as her rare gifts and splendid attainments justify. She was most popular in "Il Poliuto" and "Faust."

KELLOGG, Frank Billings, statesman, born in Potsdam, N. Y., Dec. 22, 1856. He began the practice of law at Rochester, Minnesota, where he served as city attorney and later as county attorney, and in 1887 removed to St. Paul. Here he became noted as an attorney against certain corporations that had organized to form a business restriction trust, and through his eminent ability won a national reputation. About this time he was employed by the United States government in actions against the so-called trusts of the Standard Oil Company and the railway merger attempted by the Union Pacific with the Southern Pacific lines. He was prominent in proceedings against the Harriman railways which had been instituted by the Interstate Commerce Commission. In 1912 he was elected president of the American Bar Association and in 1917 became United States Senator from Minnesota, serving until 1923.

President Coolidge appointed him ambassador extraordinary and plenipotentiary to Great Britain, in which office he succeeded George Harvey, in 1923. He succeeded Charles E. Hughes as Secretary of State, serving from 1925 until 1929.

KELLOGG, Samuel Henry, missionary, born on Long Island in 1839; died May 2, 1899. In 1861 he graduated at Princeton University, attended the theological seminary of that institution, and in 1865 became a missionary to India for the American Presbyterian Church. His chief works are "The Light of Asia and the Light of the World," "The Genesis and Growth of Religion," "From Death to Resurrection," and "Grammar of the Hindi Language and Dialects."

KELLY, William, inventor, born in Pittsburg, Pa., Aug. 22, 1811; died Feb. 11, 1888. He claimed to be the original discoverer of the process by which molten iron is changed to steel, which was patented by Sir Henry Bessemer, though Kelly was no doubt entitled to precedence in making the discovery. The patent office at Washington recognized his right to the invention, but the claim of Bessemer was then pending and the latter received documentary evidence of having the first right.

KELP, the common name of several species of brown seaweeds found along the seacoast. Some of these plants are of large size, ranging from five to ten feet in length on the Atlantic coast of North America to the giant kelp of the Pacific, which is several hundred feet in length. These plants form submarine forests of gigantic size in the Southern Hemisphere. Some of the species are used as food, but their value is principally as a manure for enriching the soil. Formerly kelp was employed to a considerable extent in making soda, for which purpose it was dried and burned at a low heat. The product is itself called *kelp*, and is now used chiefly in the production of iodine and chloride of potassium.

KELVIN (kĕl′vĭn), **Lord.** See **Thomson, Sir William.**

KEMBLE (kĕm′b'l), **Frances Anne,** authoress and actress, born in London, England, Nov. 27, 1809; died Jan. 15, 1893. She gave readings from Shakespeare with remarkable success, and as reader appeared in the principal cities of the United States and Great Britain. She is the author of "A Year of Consolation," "Francis the First," "Record of a Girlhood," and "Journal of a Residence on a Georgian Plantation."

KEMBLE, John Philip, tragedian, born in Prescott, Lancashire, England, Feb. 1, 1757; died in Lausanne, Switzerland, Feb. 20, 1823. In 1783 he played *Hamlet* and other Shakespearean characters at Drury Lane, London, and by his keen conception of the characters aroused enthusiastic approval.

KEMAL, Mustapha, soldier and statesman, born at Saloniki, Greece, in 1881. He studied in the War Academy at Constantinople under German instructors, including Marshal von der Goltz. During the World War he rendered efficient service for his country, holding high position at the Dardanelles, on the Russian front, and in Asia Minor; at Kut-el-Amara he defeated the British and captured Gen. Townshend.

The Treaty of Versailles practically dismembered Turkey, compelling the Turks to evacuate Europe, leaving them in control of only a small region in Asia, but Kemal remained firm and promoted the nationalist movement. In 1919 he operated against the Turks under the Sultan in Smyrna and in the following year set up a government at Angora, which deposed the Sultan in 1922. Mustapha Kemal was elected president of Turkey in 1923.

KEMPIS (kĕm′pĭs), **Thomas à,** clergyman and author, born at Kempen, near Cologne, Germany, in 1379; died July 26, 1471. In 1399 he entered the Augustinian convent of Mount Saint Agnes, near Zwolle, in the Netherlands, and spent a long and useful life in that capacity. Priest's orders were given him in 1413 and he became subprior in 1425. His numerous sermons, letters, hymns, and historical biographies are evidences that he was a man of much piety and learning. The influence that he wielded demonstrates his devotion and ability. His greatest work is "Imitation of Christ," in which are contained evidences of passionate and pious religious devotion. This production has been translated almost as largely as the Bible. Its authorship was a matter of doubt for many years, but is generally conceded to Kempis. The name of this celebrated writer is properly Thomas Hemerken, meaning in German, "Little Hammer," but he was named Kempis from the place where he was born.

KENDAL (kĕn′dạl), **Mrs.**, actress, born at Great Grimsby, England, March 15, 1849. Her real name was Margaret Robertson Grimston, having married W. H. Grimston (Mr. Kendal) in 1869. She played juvenile rôles at an early age, and made her regular début at the Haymarket Theater, London, as *Ophelia* in 1865. Later she played at Drury Lane with much success. She was particularly popular as *Lilian Vavasour* in "New Men and Old Acres." In 1878 she joined a company at the Prince of Wales's Theater. Her later successes were as *Kate Verity* in "The Squire," *Rosalind* in "As You Like It," and *Claire de Beaupré* in "The Ironmaster."

KENDALL, Amos, public man, born at Dunstable, Mass., Aug. 16, 1789; died Nov. 11, 1869. He descended from English parentage and spent his boyhood on his father's farm. In 1811 he graduated at Dartmouth, where he made a creditable record, and afterward studied law. He removed to Lexington, Ky., where he established a successful practice. After entering upon a political career, he became an adviser of Andrew Jackson, who appointed him to a position in the Treasury department. He was a foremost figure in the so-called "Kitchen Cabinet." In 1835 he was made Postmaster-General under Jackson, in which office he continued to serve during the greater part of the administration of Van Buren. Later he became interested with Samuel F. B. Morse in telegraph patents and made a fortune. The closing years of his life were spent at Washington, where he did much to establish schools and charities. Although he became a supporter of Lincoln, he classed himself as a Jackson Democrat.

KENDALL, Henry Clarence, poet, born in New South Wales, Australia, April 18, 1841; died Aug. 1, 1882. He first entered upon a commercial career, but soon turned his attention to writing for the press. Later he devoted himself exclusively to literary work, and by his pleasing style was able to win a high place among the poets of Great Britain. His collected works were published with a memoir by Alexander Sutherland, in London, sometime after his death. Among his chief works are "September in Australia," "To a Mountain," "The Voice in the Wild Oak," "Leaves from an Australian Forest," and "Songs from the Mountain."

KENESAW MOUNTAIN, Battle of, an engagement of the Civil War, fought near Marietta, Ga., on June 27, 1864. General Sherman with a Federal force of 95,000 men undertook to march from Chattanooga to Atlanta. At Kenesaw Mountain he came in contact with 60,000 Confederates under General Johnston, who repelled the Federal assault after fighting vigorously for nearly three hours. About 3,000 Federals were missing in killed and wounded. The Confederates were compelled to retreat after a vigorous attack directed by General McPherson on July 1, and soon after took a position beyond the Chattahoochee River.

KENILWORTH (kĕn′ĭl-wûrth), a market town of Warwickshire, England, situated on a tributary of the Avon, about ninety miles northwest of London. It is noted for its castle, which, until the year 1563, was a crown possession, and at that time was given to Robert Dudley, Earl of Leicester (q. v.), by Queen Elizabeth. This earl entertained the queen there in the year 1565 for a period of eighteen days at a daily cost of $5,000. Sir Walter Scott's novel, "Kenilworth," is based upon this gorgeous entertainment. Population, 1922, 4,602.

KENNAN (kĕn′nạn), **George,** journalist and traveler, born at Norwalk, Ohio, Feb. 16, 1845. He studied at Norfolk and Columbus, Ohio, and took up the work of a telegraph operator. In 1864 he went to Kamchatka, in Asia, and the same year accompanied an exploring party in Siberia. He returned to the United States in 1868, but two years later went to Russia a second time for the purpose of exploring the Eastern Caucasus and the lower course of the Volga, making a journey of about 15,000 miles. While in that country he investigated the convict and exile system of Siberia. In 1901 he was expelled from the Russian Empire, owing to having written unfavorable accounts of the government, and the following year went to the island of Martinique as a correspondent for a New York newspaper. His publications include "Siberia and the Exile System" and "Campaigning in Cuba." He died May 10, 1924.

KENNEBEC (kĕn′ẹ-bĕk), a river of Maine, being next to the Penobscot the most important in the State. It rises in Moosehead Lake, has a general course toward the south, and flows into the Atlantic Ocean. The length is 150 miles, falling 1,000 feet in the course from the source to the mouth. It is navigable for ships to Bath and for steamers as far as Hollowell. On its banks are Bath, Augusta, and Waterville.

KENORA. See **Rat Portage.**

KENOSHA (kḗ-nō′shȧ), a city in Wisconsin, county seat of Kenosha County, on Lake Michigan, 33 miles south of Milwaukee. It is on the Chicago and Northwestern Railroad and has a fine harbor. The notable buildings include the public library, the county courthouse, the high school, and many churches. Among the manufactures are machinery, furniture, wagons, wire mattresses, hosiery, bread, candies, and ironware. The municipal facilities include electric street railways, waterworks, sewerage, and pavements. It is surrounded by a fine farming country and has a growing trade in produce and merchandise. Kenosha was incorporated as a city in 1850. Population, 1920, 40,472.

KENSINGTON GARDENS, a park about two miles in circumference, situated in the city of London, England. It extends west of Hyde Park, from which it is separated by the Serpentine. Near the northwestern part is Kensington Palace, which was purchased in 1689 by William III. This palace served as a royal residence for more than a century.

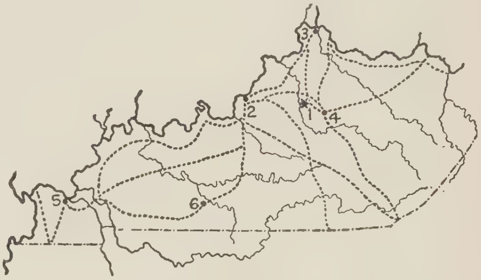
KENT, James, jurist, born in Fredericksburgh, N. Y., July 31, 1763; died Dec. 12, 1847. In 1781 he graduated from Yale College and afterward studied law. He was admitted to the bar in 1785 and established a practice at Poughkeepsie. After serving two terms in the State Legislature, he was professor of law at Columbia College in 1794-98. He was successively appointed master in chancery, recorder, judge of the supreme court, and chief justice, serving in the last named position ten years. In 1814 he became chancellor of the State, serving nine years, and was again professor of law at Columbia College in 1824-25. As a judge of law and an advocate he takes high rank. He published a treatise on law, entitled "Commentaries on American Law," which is accepted as a general standard.

KENTON (kĕn'tŭn), a city and the county seat of Harden County, Ohio, on the Scioto River, seventy miles northwest of Columbus. It is on the Erie, the New York Central, and the Cleveland, Cincinnati, Chicago and Saint Louis railroads. The chief buildings include the county courthouse, the public library, the armory, and the high school. Among the manufactures are machinery, ironware, furniture, strawboard, and bee-keepers' supplies. It is the seat of the largest iron fence factory in America. Kenton was settled in 1833 and incorporated in 1885. Population, 1900, 6,852; in 1920, 7,690.

KENTON, Simon, hunter and pioneer, born in Fauquier County, Virginia, April 3, 1755; died April 29, 1836. When sixteen years of age, he engaged in an affray with a rival in love, and, thinking he had killed his adversary, fled to Kentucky, where he became associated with Daniel Boone as a spy against the Indians. In 1778 he was captured by the Indians, but escaped. He became major of a battalion of Kentucky volunteers in 1793, and aided in the expeditions to guard the western frontiers. He was made brigadier general of Ohio militia in 1805, took an efficient part in the War of 1812, and after its close lost his vast possessions in Kentucky by the encroachment of settlers and his failure to secure a legal title to them. In 1824 he appeared before the Kentucky Legislature in tattered garments and petitioned for relief. His request was granted, and later Congress voted him a pension of $240 a year.

KENTUCKY (kĕn-tŭk'ĭ), a southern state of the United States, known popularly as the *Bluegrass State.* It is bounded on the north by Illinois, Indiana, and Ohio, east by Virginia and West Virginia, south by Tennessee, and west by Missouri and Illinois. The greatest breadth from north to south is 190 miles and the extreme length from east to west is 460 miles. It is separated from Virginia by the Big Sandy River, from Missouri by the Mississippi River, and from Illinois, Indiana, and Ohio by the Ohio River. The area, including 400 square miles of water surface, is 40,400 square miles.

Description. The surface slopes from the southeast to the northwest, and is comprised largely within the Allegheny Plateau. In the southeastern portion are the Cumberland Mountains and the Kentucky Ridge, which form elevations from 1,800 to 3,550 feet above sea level. A range of hills, known as the *Knobs,* extends centrally across the State from the southern border to the Ohio. In the interior and northeastern parts the elevations are from 300 to about 1,000 feet above sea level, much of which region is included in the celebrated bluegrass country. Swamps abound in the southwestern part among the elevated ridges, where the country is characterized by extensive forests. In the same region, but somewhat toward the west, are vast limestone formations that extend to the central part of the State. Within this section are numerous caves and caverns, including the celebrated Mammoth Cave (q. v.).



KENTUCKY.

1, Frankfort; 2, Louisville; 3, Newport; 4, Lexington; 5, Paducah; 6, Bowling Green. Chief railroads are indicated by dotted lines.

The drainage belongs exclusively to the Mississippi system and the Mississippi River receives the inflow almost entirely through the Ohio, Mayfield Creek and a few minor streams being the only tributaries that discharge directly into it. The Mississippi forms 80 miles of the western border and the Ohio forms the entire northern boundary, having a winding course of nearly 600 miles. In the western part are the Cumberland and Tennessee rivers, but the former, owing to its great length, also drains a large region in the southeastern part. Other important streams include the Tradewater, Green, Kentucky, and Licking rivers. Many of the streams are navigable and supply splendid facilities for interior commercial intercourse. The State has no lakes aside from a few small sheets of water.

The climate is equable and healthful. In the winter the prevailing winds are largely from the northwest and in the summer they blow mostly from the southwest. The mean temperature is about 55°, ranging from 35° in winter to 78° in summer. During the summer season the thermometer rises as high as 100° and in winter it very rarely falls to zero. Snow seldom falls in winter in the southern part, but it is frequently quite heavy in the northeastern section. The annual rainfall averages about 40 inches, ranging from 36 to 45 inches as the years are wet or dry.

MINING. Kentucky has an abundance of many useful minerals. Extensive deposits of coal are worked in the central and eastern parts of the State. The coal area is about 13,500 square miles in extent, forming a continuation of the fields in Indiana and Illinois. In 1922 the output was 26,385,000 tons, which is about the average yield for the past several years. The larger output consists of bituminous coal, but small quantities of cannel coal are obtained. Iron ore is found in more or less paying quantities in the coal regions, but this mineral is not worked extensively. Petroleum occurs in the south central part of the State and natural gas is obtained in several counties. Other minerals include salt, lead, gypsum, fluor spar, and fire and brick clays. Building stones of a superior quality are widely distributed.

AGRICULTURE. Originally the State was covered almost entirely with dense forests, but at present about 86 per cent. of the area is included in farms. Fully two-thirds of the farms are operated by the owners and the remainder are worked largely in small tracts by tenants. Corn and tobacco are the principal crops. The area cultivated in corn is nearly twice as great as that utilized in raising all other cereals, which include wheat, oats, and rye. A large acreage of hay is grown to supply the extensive interests vested in stock raising. Other crops include hemp, potatoes, sorghum, vegetables, and fruits. Kentucky is the leading tobacco-growing State and produces more than 20 per cent of the crop grown in the entire country. The breed of road horses reared in Kentucky is well known, and the class of racing horses peculiar to that State have a high reputation. Large interests are vested in the cattle industry, both for the production of meat and for dairying. Other domestic animals include swine, sheep, mules, and poultry.

MANUFACTURING. Kentucky has taken high rank as a manufacturing state for more than half a century. In the output of tobacco and tobacco product it holds first rank, the annual value of these products being about $52,500,000. High in the list are the slaughtering and packing interests which have a combined value approximately as large as that of the manufactures of all classes of products. The output of the flouring and grist mills is likewise large. Being favored with an abundance of hardwood forests, such as oak, walnut, and cypress, the State has large interests in the manufacture of timber products, especially lumber and furniture. Other manufacturers taking high rank include meat and other slaughtering products, leather, iron and steel, railway cars, clothing, and cotton and woolen goods. Louisville, Covington, Newport, and Lexington are among the manufacturing centers.

TRANSPORTATION. Few states are as favorably situated for river transportation as Kentucky, having ample facilities on the Ohio, Mississippi, Cumberland, Tennessee, Green, and Licking rivers. The State has 3,800 miles of steam railways in operation, including lines of the Illinois Central, the Chesapeake and Ohio, the Louisville and Nashville, and the Mobile and Ohio. Electric lines have been built in all parts where the population is reasonably dense. Many highways have been graded and macadamized. Considering the fact that much of the surface is very rolling and rugged, it must be said that Kentucky has made rapid strides in constructing means of communication, although a number of counties in the eastern part of the State are not supplied with railway facilities.

GOVERNMENT. The executive authority is vested in the Governor and Lieutenant Governor, who are elected for a term of four years and are not eligible to reëlection. Other State officers include the treasurer, register of land office, auditor of public accounts, secretary of State, superintendent of public instruction, attorney-general, and commissioner of agriculture, labor, and statistics. The legislative functions are exercised by a senate and a house of representatives. Members in the former are elected for four years and of the latter for two years, the upper house having 38 senators and the lower house 100 representatives. Sessions of the Legislature are held in even years, beginning the first Tuesday after the first Monday in January. The supreme court, known as the court of appeals, is the highest judicial tribunal. It is presided over by from five to seven judges, who are elected from districts for a term of eight years. Subordinate to it are the circuit courts, county courts, and justice courts. The county officers are elected for terms of four years.

EDUCATION. The census reports show a steady decrease in illiteracy. Those who were unable to read and write in 1920 constituted 8.4 per cent. of the inhabitants of ten years or over, as against 21.6 per cent. in 1890. A system of public instruction is maintained by interest on State bonds and by general taxation. The presence of a large proportion of Negro inhabitants in many parts of the State has given rise to separate schools. Supervision is under the direction of county and city superintendents, who look after the schools locally under the superintendence of the State department of public instruction. Systematic courses of study have been devised by a State board for the public schools, particularly the high schools of cities and towns, which are graded so as to articulate with the institutions of higher learning. Kentucky University, at Lexington, is the most important educational center in the State. However, higher instruction is given in about 35 colleges and 67 academies, besides in numerous institutions for special culture. Among the centers of learning are the Central College, Danville; Berea College, Berea; Williamsburg Institute, Williamsburg; Georgetown College, Georgetown; Ogden College, Bowling Green; Eminence College, Eminence; Bowling Green Business University, Bowling Green; Kentucky Military Institute, Farmdale; and Liberty College, Glasgow.

Ample provisions have been made for the care of the unfortunate and incorrigible. Danville has a school for the deaf, Louisville has a school for the blind, and Frankfort has an institution for feeble-minded children. The penitentiaries are at Eddyville and Frankfort. Asylums for the insane are located at Anchorage, Hopkinsville, and Lexington. Many hospitals are maintained by private interests in the cities. State normal colleges are maintained at Murray, Richmond, and Bowling Green.

INHABITANTS. The foreign-born population is small, being only 50,249. As compared with most of the southern states, Kentucky has a large urban population. Frankfort, in the north-central part of the State, on the Kentucky River, is the capital. Other cities include Louisville, Covington, Newport, Lexington, Paducah, Owensboro, Bowling Green, Danville, Henderson, and Hopkinsville. In 1900 the State had a population of 2,147,174. In this number were included 284,706 Negroes, 57 Chinese, and 102 Indians. Population, 1920, 2,416,013.

HISTORY. Kentucky, like other states of the Mississippi valley, contains historic relics of the mound builders. Its name, signifying "The dark and bloody ground," was derived from the different tribes of Indians who met in various warlike conflicts in the region, which did not form the possession of a single tribe. Thomas Walker, who visited the section in 1750, was probably the first white man to make an extended report on its resources. Daniel Boone made an exploring expedition from North Carolina in 1769, and the first settlement was formed at Harrodsburg by James Harrod in 1774. Originally the entire territory was included with the colony of Virginia. It was made a separate territory in 1790 and admitted into the Union as a State in 1792. Many of its citizens took an active interest in the Mexican War. The State did not secede during the Civil War, though Kentuckians served in both armies, and it was represented in the Confederate Congress. Lincoln proclaimed martial law in the State in 1864, and Johnson restored civil authority the following year. The battles fought within its borders include those of Richmond, Mill Spring, and Perryville.

In 1908 local differences among the growers of tobacco were the occasion of much agitation and litigation. The tobacco trust had dictated the price paid for tobacco, which caused many producers of tobacco to organize a movement for mutual protection. However, a class of independent tobacco growers refused to join in the movement, which caused parties of men, known as *Night Riders,* to destroy much property at Hopkinsville and other places. Many of the raiders were captured, convicted, and executed.

KENTUCKY, a river in Kentucky, formed in Lee County by the junction of three forks that rise in the Cumberland Mountains. After a tortuous course of about 260 miles it flows into the Ohio River at Carrollton. It courses through a rich mineral and agricultural country, has been improved in its lower portion, and is navigable beyond Frankfort. The basin of the Kentucky contains deposits of coal, iron ore, and marble.

KENTUCKY RESOLUTIONS, a series of resolutions adopted by the Legislature of Kentucky, closely associated in spirit and contents with the Virginia Resolutions. They resulted from a feeling that the Federal party was making illegitimate use of the powers granted by the constitution to the Federal government. The Kentucky Resolutions were framed by Thomas Jefferson and introduced in the Legislature of Kentucky by John Breckenridge in 1798. They set forth the unconstitutionality of the Alien and Sedition Laws, and declared that the Union is not based upon the principle of unlimited submission to the general government. In 1799 the Legislature of Kentucky declared a nullification of a Federal law by a State to be the rightful remedy in cases of Federal usurpation. The Virginia Resolutions were similar in sentiment, but were milder in their expression. They were passed by the Legislature of Virginia in 1798, and were probably written by James Madison. Though copies of both sets of resolutions were sent to the governors of all the states, no favorable response was evoked.

KENTUCKY UNIVERSITY, an institution of higher learning founded at Georgetown, Ky., in 1837, and removed to Lexington in 1864. It comprises four colleges, the College of the Bible, the Hamilton Junior College, the Department of Education, and the Department of Pre-medic, Pre-law, and Journalism. It is under control of the Disciples of Christ, has property valued at $1,300,000, and is attended by 458 students. The endowments aggregate $1,625,000. The institution is now known as Transylvania College.

KEOKUK (kē′ô-kŭk), a city of Iowa, one of the county seats of Lee County, at the confluence of the Des Moines and the Mississippi rivers, over the latter of which it is connected by a fine railroad bridge with Warsaw and Hamilton, Ill. It is on the Wabash, the Chicago, Burlington and Quincy, the Chicago, Rock Island and Pacific, the other railroads. A short distance above the city are the rapids of the Mississippi, which formerly obstructed navigation, but they have been overcome by a canal constructed by the Federal government. This canal is 300 feet wide and nine miles long and cost $8,000,000. The noteworthy buildings include the high school, the union depot, the Federal building, the opera house, the public library and the Y. M. C. A. building. Rand Park, which contains the grave of the Indian Chief Keokuk, and the National Cemetery are other features of interest.

The site of the city is on limestone bluffs 150 feet high. The business blocks are substantial and largely of native material. Among the general facilities are electric street railways, graded and paved streets, waterworks, and a sewerage system. Among the manufactures are starch, flour, machinery, clothing, pottery, shoes, bread, and rolled oats. It has a large trade in grain and merchandise. The place was incorporated in 1848. It is popularly called the Gate City. Population, 1905, 14,604; in 1925, 14,501.

KEPLER (kĕp′lẽr), **Johann,** eminent astronomer, born at Weilderstadt, in Württemberg, Germany, Dec. 27, 1571; died in Ratisbon, Nov. 15, 1630. He was left to his own resources when a child, because of which his early education was neglected, but later he studied at Maulbronn and graduated at the University of Tübingen. In 1593 he was chosen a teacher of mathematics at Gratz, in Styria. During his residence at that city he devoted himself with much zeal to the study of astronomy, but when the religious persecution began, in 1599, he accepted an election to Prague tendered by Tycho Brahe. There he assisted in the preparation of astronomical charts and tables, and, after the death of Tycho, continued this work by himself, and received an appointment under Ferdinand II. as imperial mathematician and astronomer. Later he accepted an appointment at Ratisbon, and there, as elsewhere, he suffered the pangs of poverty, owing to an inadequate salary. In 1602 he published "Principles of Astronomy." The work of Kepler is of vast importance. Although Copernicus had established the theory of the motion of the planets, it was still held that heavenly bodies move without unity and fixed natural laws, but it was generally thought that the sun is the common center of all.

JOHANN KEPLER.

The three great laws of Kepler were announced after studying a quarter of a century and form the basic beginning of modern astronomy. These are: 1. The planets move in ellipses with the sun at one focus. 2. The radius vector of each planet sweeps over equal areas in equal times. 3. The squares of the times of the revolution of the planets are proportional to the cubes of their distance from the sun. Besides these, he announced the law of diminution of light in proportion to the inverse square of the distance, the decrease in the attractive force of the sun with distance, and many valuable discoveries in geometry and physics. His most important publication is "The New Astronomy, or The Celestial Physics Delivered in Commentaries on the Motion of Mars." Many of the theories of Kepler were not accepted until long after his death, and some of his books were prohibited by the Inquisition. In speaking of his "Harmonies of the World," he said: "It may well wait a century for a reader, as God has waited 6,000 years for an observer."

KÉRATRY (kȧ-rȧ-trē′), **Émile de,** statesman, born in Paris, France, March 20, 1832; died in 1904. He was the son of Auguste Hilarion de Kératry (1769-1859). In 1870 he was made prefect for Paris. However, he soon resigned and accepted a diplomatic mission to Spain. Gambetta made him commander in chief of the army organized in the five departments of Brittany, but he resigned and in 1871 was made prefect of Haute-Garonne.

KERENSKY, Alexander, public man, born at Simbrisk, Russia, in 1868. He studied at Petrograd and took up the practice of law. The labor party elected him a member of the fourth Duma, where he became distinguished as an orator, and after the fall of Czar Nicholas he assumed the head of the government. He had the good will of the Entente Allies, but was compelled, in 1918, by the Bolsheviki to resign.

KERN, John Worth, public man, born in Howard County, Ind., Dec. 20, 1849. He studied at Ann Arbor, Mich., and was chosen reporter of the Indiana supreme court. In 1908 he was defeated for Vice-President on the Democrat ticket. He was elected United States senator in 1911. He died Aug. 17, 1917.

KEROSENE (kĕr′ŏ-sēn), an oil used to illuminate and for heating purposes. Formerly it was obtained from the distillation of shales and bituminous coal, hence is sometimes called *coal oil,* but it is now produced principally by the distillation and purification of petroleum. It has a slightly yellowish color, a disagreeable odor, and the property of burning with a bright flame. Russia and the United States are the largest producers of kerosene. Gas and electric lights have displaced it largely for lighting.

KERSHAW (kẽr-sha̤′), **Joseph Brevard,** general, born in Camden, S. C., Jan. 5, 1822; died April 13, 1894. In 1843 he was admitted to the bar, after which he established a profitable practice, and served in the State senate from 1852 until 1857. At the beginning of the Civil War he raised a regiment for service in the Confederate army, and rose to the rank of brigadier general before the end of the war. Among the battles in which he took a prominent part are Fredericksburg, Bull Run, Antietam, Chancellorsville, Chickamauga, and Gettysburg.

KESTREL (kĕs′trĕl), or **Windhover,** a species of falcon native to Europe and Africa. It is about one foot in length and in color and habits closely resembles the sparrow hawk of America. The kestrel hovers in search of prey at a height of about forty feet and pounces suddenly upon small birds, mice, and reptiles, hence the name *windhover*. Young kestrels may be trained to pursue small birds, such as larks, quails, and snipes. The plumage is of a variety of colors, usually light grayish-blue in the male and somewhat reddish in the female.

KETCHUP, or **Catsup,** a sauce made extensively for table use, so named from the Japanese *kitjap,* which is a favorite article in the East for seasoning fish and meat. The table sauce used commonly is made from tomatoes, mushrooms, and walnuts. It is a healthful condiment.

KEW (kū), a village of England, in the County of Surrey, on the Thames, opposite Brentford and about one mile northeast of Richmond. It is noted as the seat of the royal botannical gardens. These gardens were commenced by the mother of George III., and visitors are still shown a cottage with furniture as it was left by Queen Charlotte. They have been open to the public since 1840, when they were presented to the nation by Queen Victoria. Besides containing a large collection of native and exotic plants, these gardens have an observatory, a gallery of paintings of tropical flowers, and several museums.

KEWANEE (kē-wä′nē), a city of Henry County, Illinois, about 130 miles southwest of Chicago. It is on the Chicago, Burlington and Quincy Railroad, in a coal-producing region, and is surrounded by a fertile agricultural, fruit-growing, and dairying country. The chief buildings include the public library, the high school, and a number of churches and business blocks. Many of the streets are well graded and paved. The manufactures include pumps, flour, ironware, windmills, bottled goods, and machinery. It has municipally owned waterworks. The government is under a charter granted in 1897. Population, 1900, 8,382; in 1920, 16,026.

KEY, Francis Scott, distinguished American, born in Frederick County, Maryland, Aug. 9, 1780; died in Baltimore, Md., Jan. 11, 1843. He took a course at Saint John's College, Annapolis, studied law, and entered upon the practice at Frederick City, Md. Later he became district attorney at Washington, D. C. The British invaded Maryland in 1814, when William Beanes, a planter, was made prisoner, and Key resolved to secure his release. While attempting to carry out his design, he likewise was made a prisoner and detained on a British man-of-war, being confined there during the bombardment of Fort McHenry, the defense of Baltimore. In the morning he watched anxiously to see whether the American flag was still floating, and, when seeing it waving, he found expression in the "Star-Spangled Banner," which is sung by the tune "Anacreon in Heaven." It gave him a lasting reputation. James Lick, of California, gave $60,000 to build a monument for Key, which was erected in 1887 in the Golden Gate Park, San Francisco.

KEYES, Erasmus Darwin, soldier, born at Brimfield, Mass., May 29, 1810; died Oct. 14, 1895. He graduated at the United States Military Academy in 1832, served on the frontier against the Indians and during the Civil War, and subsequently became interested in gold mining in California. During the Civil War he fought in the first Battle of Bull Run and later commanded in the Army of the Potomac, under General McClellan. In 1863 he took part in the expedition against Richmond. The following year he resigned from the service, having attained to the rank of brigadier general. He published "Fifty Years' Observation of Men and Events."

KEY WEST, a city and the county seat of Monroe County, Florida, on the island of Key West, sixty miles southwest of Cape Sable. It is the most southerly city of Florida and of the United States, has a fine harbor, and is connected with the mainland by a railroad. The harbor is defended by Fort Taylor, which is near the entrance on an artificial island. Two lighthouses are maintained at the harbor. Steamships furnish regular communication with Havanna and the principal ports of the Atlantic coast.

Key West is a fine city and has well-lighted and substantially paved streets. The noteworthy buildings include the public library, the post office, a Methodist seminary, the county courthouse, the customhouse, a marine hospital, and the United States building. Intercommunication is by a system of electric railways. It has an important jobbing trade, especially in tobacco and fruits. Among the manufactures are cigars, smoking and chewing tobacco, clothing, and machinery. The climate is agreeable and as a health resort it is a favorite place for consumptives. The island of Key West is about seven miles long, from two to three miles wide, and has an elevation of about ten feet above sea level. Key West, the city, was founded about 1822 and was incorporated in 1832. Population, 1906, 21,174; in 1925, 13,706.

KHAN (kän), the title applied to Tartar and Mongol chiefs and sovereigns. Though formerly it expressed high rank, it is now applied especially to the chiefs of the nomadic tribes and to governors of cities.

KHARKOV (kär′kôf), a government in the south central part of Russia, in Europe, with an area of 21,050 square miles. Kharkov, the capital, is one of the most important cities of southern Russia. It is situated at the junction of the Lopan and Kharkov rivers, and is a convenient railroad center. Besides numerous public schools and churches, it is the seat of the University of Kharkov. The surrounding country is fertile and produces large quantities of bituminous coal and petroleum. Among the manufactures are beet sugar, candles, leather, machinery, soap, and canned fruit. It was founded in the 16th century. Population, 1906, 201,308; in 1921, 206,884.

KHARTUM (kär-tōōm′), or **Khartoum,** a city in Eastern Soudan, on the Blue Nile, near its junction with the White Nile, on the line of the Cape-to-Cairo Railway. The surrounding country is a sterile and treeless region. In 1830 it began to grow rapidly and soon after became the capital of the Egyptian Soudan, when it developed an important trade in gum, senna, ivory, ostrich feathers, and fruits. The older portions contain numerous houses constructed of sun-dried brick, but in the newer part the buildings are imposing and largely built of native wood and stone. In 1884-85 General Gordon was held captive in the city by superior forces under command of the native Mahdi, and was slain along with many others before the British relief army arrived. At that time it had a population of 72,498, but it was razed to the ground and the capital was removed to Omdurman, on the opposite side of the river. Lord Kitchener captured the place in 1898 and reinstated it as the capital. Population, 1922, 31,065.

KHEDIVE (kȧ-dēv′), the title of the Egyptian rulers. It was first used in 1866, when it was applied to Ismail Pasha. The word signifies lord or lordship.

KHIVA (kē′vȧ), a semi-independent khanate in Central Asia, forming a part of Turkestan. The general surface is sandy, but there are numerous fertile tracts. It is inhabited by various resident and nomadic tribes. The area is about 22,000 square miles. It is governed from Khiva, a city situated on two canals west of the Amur River, which contains a population of 6,085. In 1717 Peter the Great of Russia sent an expedition to conquer Khiva and a second attempt was made by Czar Nicholas in 1839. Since 1873 it has been a part of Asiatic Russia. A short distance south of it passes the Trans-Caspian Railroad, from the Caspian Sea to Samarkand. The construction of this railroad line has materially affected its importance, and has given an impetus to various manufactures. Khiva, the capital, is the seat of several Mohammedan colleges, has many bazaars, and is fortified by walls and earthworks. The Khanate has a population of 800,550.

KHORSABAD (kōr-sä-bäd′), a village in Asiatic Turkey, twelve miles northeast of Mosul, near the ancient city of Nineveh. Extensive excavations led to the discovery of the palace of Sargon, which was built about 700 B. C., and from it were obtained the first historical inscriptions found in ancient Assyria. The French government uncovered a large part of the palace in 1844. Most of the relics found there are now in the Louvre of France.

KHYBER PASS (kī′bẽr), a military road between Afghanistan and the Punjab. This pass is an important strategic point. It has a length of 30 miles and a width of from 10 feet to 150 yards. The cliffs on either side rise perpendicularly to heights of from 800 to 3,000 feet. Alexander the Great, as well as the Russian and British, found the pass of vast importance in military operations. It constitutes the key to northern Afghanistan.

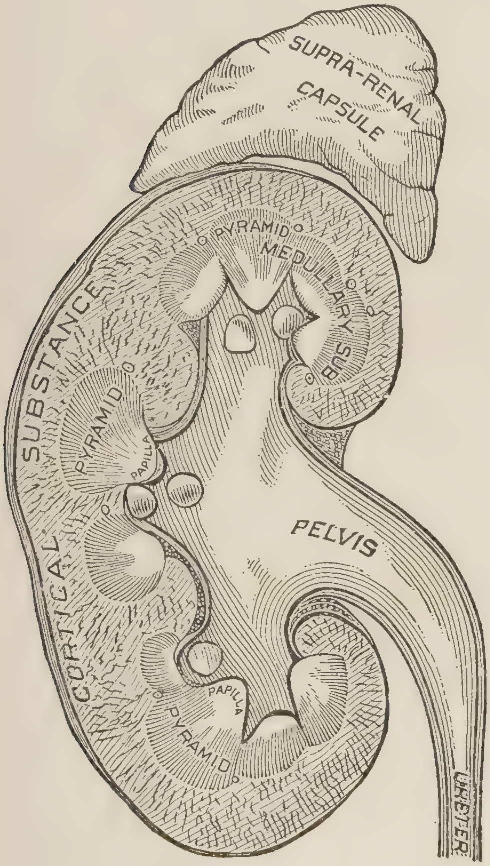
KIAO-CHAU (kyä′ō-chou), or **Kiao-chow,** a leased protectorate in China, on the south coast of the peninsula of Shan-tung. The possession has an area of 200 square miles. A good harbor is located at Tsing-tao, which was greatly improved and made the capital of the German zone. It has wide and regularly platted streets, waterworks, electric lighting, and a number of fine government buildings. A railway line extends inland to the coal fields of Lao-shan. Kiao-chau, the largest native city within the possession, was formerly the center of an important trade, which has been transferred to the new port of Tsing-tao. In 1917 it was captured by the Japanese, who held it subsequently.

KICKAPOO INDIANS (kĭk-ȧ-pōō′), a tribe of Algonquin Indians. They were first found by the French and English pioneers of the Ohio valley, but their largest centers were on the Illinois River. In 1779 they assisted the French against the English, but, after being defeated by Wayne, they ceded a part of their lands, in 1802-4. They allied themselves with the English in the War of 1812, but sustained disastrous defeats, and in 1822 the majority removed from the Illinois to the Osage. The greater number emigrated to Kansas in 1854, and in 1863 a large party removed to Mexico, but ten years later returned and settled in Indian Territory, now Oklahoma. The present number of Kickapoos in the United States is 550, of whom about 230 reside in Kansas. Within recent years many have been favorably inclined to education and have taken up civil arts.

KIDD, William, Scotch pirate, known as Captain Kidd, born in Greenock, about the middle of the 17th century. He went to sea when a mere lad, attained a high reputation for stubborn courage against the French, and in 1691 was granted a reward of $750 from the city of New York. Soon after he was given command of a vessel to suppress piracy in the Indian Ocean, and for that purpose was furnished with letters of marque. He reached Madagascar in 1697, where, after some time, he was suspected of engaging in the traffic he was commissioned to destroy, and later became one of the most noted of pirates. He was arrested on his return to New England in 1699 and sent to England for trial, where he was found guilty of murdering one of his men and was hanged in London on May 24, 1701, though protesting innocence to the last. The trial was unfair and it is quite probable that he was not guilty of the crime for which he was executed. One of Edgar Allan Poe's tales is based on the legend that Kidd buried treasures of vast value on the banks of the Hudson or the shores of Long Island Sound.

KIDNAP, to steal, secrete, or carry away any person against his will. The act of kidnapping is regarded by the law as an aggravated species of false imprisonment and embraces the legal elements of that offense. It includes an assault and the act of carrying away or transporting the party injured, either to some place in his own country or to some other country against his will. The offense may be committed both against children and adults. The statutory penalties for the crime are severe, varying from 10 to 25 years' imprisonment.

KIDNEY, one of two glands which are common to vertebrate animals, whose function is to secrete urea and other waste products from the system. They are situated at the back of the abdominal cavity, one on each side of the vertebral column. In man they are near the fifth rib, but, owing to the position of the liver, the right kidney is somewhat lower than the left. The accompanying illustration shows the internal cavity, which is bounded by the outer *cortical substance.* The conical masses of the *medullary substance,* from fifteen to twenty in number, form the *pyramids.* At the apexes of the pyramids are the *papillae.* Above or anterior to each kidney is the *suprarenal capsule,* whose function appears vital upon the blood and muscles. The inner cavity, or *pelvis,* terminates in the ureter. The shape of these organs is that of the kidney bean, the concave side being turned inward and toward the spine, and each is imbedded in a layer of fatty tissue.



SECTION OF KIDNEY.

The average weight of the kidney in man is from four to six ounces. It is about four inches long, the color is deep red, and the constitution is dense and fragile. The outer part is covered by a thin but tough membrane. A canal, known as the *ureter,* conveys the urine from the kidney to the bladder, where it is retained until a normal quantity has accumulated, when it is expelled from the body. The health depends in a large measure upon the regularity with which the uric acid is taken up by the kidneys. Among the diseases of the kidneys is the well-known Bright's disease (q. v.). See **Gout.**

KIEFT (kẽft), **Willem,** colonial administrator, born in the Netherlands; died in 1647. Little is known of his life until 1638, when he came to America as the director-general of the New Netherlands. His administration was unsuccessful, being disturbed by domestic contentions and wars with the Indians. In the latter part of his government he was associated with a council of twelve men, but he was superseded by Peter Stuyvesant in 1647. Soon after he sailed for Holland on the *Princess,* which was wrecked in a storm on the coast of England, when he and many other passengers were drowned.

KIEL (kēl), a city of Germany, capital of Schleswig-Holstein, situated on Kieler Hafen, an inlet of the Baltic Sea. It has extensive shipyards, dry docks, flouring mills, iron foundries, tobacco works, machine shops, sugar factories, oil mills, and engineering works. Besides its numerous public schools and historic churches, it is the seat of a noted university, which has an attendance of 1,250 students and a library of 250,000 volumes. The city is supplied with all modern municipal facilities. It has extensive railroad connections, electric street railways, and communication with the Elbe by a ship canal. As a member of the Hanseatic League it attained much commercial importance. In 1814 it was the seat of the congress that concluded the Treaty of Kiel by which Denmark ceded Norway to Sweden. Population, 1905, 163,772; in 1920, 211,044.

KIELLAND (kĕl'lȧn), **Alexander Lange,** novelist, born at Stavanger, Norway, Feb. 18, 1849. He descended from wealthy parents, studied law at the University of Christiania, was admitted to the bar in 1872, and engaged in the manufacture of brick and tile. In 1881 he closed out his business and turned attention to literary work. He made an extended tour of Europe in 1889 and subsequently published *The Stavanger* a daily newspaper. His novels resemble in style and conception the product of French writers, especially Daudet, but his comedies are more inclined to independence. Among his publications are "Tales of Two Countries," "New Novelettes," "Saint Hans Festival," "Three Pairs," "Homeward Bound," "Garman and Worse," and "Betty's Guardian." He died April 6, 1906.

KIESELGUHR (kē′sĕl-gōōr). See **Dynamite.**

KIESERITE (kē′zẽr-īt), a mineral obtained in the mines of Stassfurt, Germany. It is a hydrated magneseum sulphate and is used in the manufacture of fertilizers and Epsom salt.

KIEV (kē′yĕf), or **Kieff,** a government in the southwestern part of European Russia. It has an area of 19,690 square miles. The capital, Kiev, is an important commercial and manufacturing city. It is situated on the Dnieper River, 270 miles north of Odessa, and has communication by several railroads. The University of Kiev has fine botanical and zoölogical gardens, extensive courses of study, and an enrollment of 2,675 students. The manufactures include beet sugar, clothing, machinery, woolen goods, porcelain, and tobacco. The surrounding country is farming and dairying and has a mild climate. It is an important commercial center. Kiev is an ancient city and is mentioned as early as the 5th century. It has been a part of Russia since 1668. Population, 1921, 323,488.

KILAUEA (kē-lou-ā′ä), one of the most noted volcanoes in the world, situated on the island of Hawaii, thirty miles southwest of Hilo. The crater is oval and has a circumference of about eight miles. Volcanic action is constant, the most extensive disturbances occurring in 1789, 1823, 1832, 1840, and 1866.

KILDEER. See **Plover.**

KILIMANJARO (kĭl′ē-män-jä′rō), a celebrated snow-clad mountain in German East Africa, 98 miles from the port of Mombasa and 150 miles from Lake Victoria Nyanza. It has two elevated peaks or craters called Kimawenzi and Kibo, the highest of which, Peak Kibo, is 19,680 feet above sea level. It forms the most elevated peak of the African continent. The summit is covered with snow perpetually, but on its lower slopes are fine forests. Hans Meyer ascended Kibo in 1889.

KILLARNEY (kĭl-lär′nĭ), a town of Kerry County, Ireland, celebrated as a resort for tourists. Three beautiful lakes are located within the immediate vicinity. The smaller of the lakes has an area of 430 acres; largest, 5,000 acres; and the one known as the middle lake, 680 acres. These lakes are famous for their remarkable beauty and the shady dells surrounding them. They are fed by the Flesh River and several smaller streams. The Laune River is the outlet. Numerous picturesque islands dot their surface. The town has a population of 5,680.

KILN (kĭl), a structure or furnace of brick or stone. Kilns are used for calcining, baking, burning, drying, or annealing various substances, especially such as brick, iron ore, corn, cement, hops, pottery, and malt. They are constructed according to various patterns best fitted for the purpose for which they are intended, but in all of them it is designed to generate an abundance of constant heat with the least possible consumption of fuel. Those intended for drying and baking cereals, or their products, are often constructed of light material, while those designed for generating great heat are made of the best fire-clay brick. According to the course of the draught, they are classified as *up-draught* and *down-draught.*

KILOGRAM (kĭl′ō-grăm), a measure of weight in the metric system, being a thousand grams, equal to 2.2046 pounds avoirdupois. It is equal to the weight of a cubic decimeter of distilled water at the temperature of 39° Fahr., its maximum density.

KILOGRAMMETER (kĭl′ō-grăm-mē-tẽr), a measure of energy, being the amount expended in raising one kilogram through the height of one meter, in the latitude of Paris, France.

KILPATRICK (kĭl-păt′rĭk), **Hugh Judson,** soldier, born near Deckertown, N. J., Jan. 14, 1836; died in Valparaiso, Chili, Dec. 4, 1881. He graduated from West Point in 1861 and immediately entered the Union army as second lieutenant of artillery. On June 10 of the same year he was wounded at Big Bethel, and after his recovery was commissioned lieutenant colonel. His services were mostly in the East, but in 1864 he joined Sherman on the march to the sea, and in 1865 was made major general. President Grant appointed him minister to Chili in 1868, and he was appointed to the same position in 1881, at which time his death occurred. He was familiarly known as General Fitz-Kilpatrick, and was a popular Republican campaign orator. His best known lecture is "The Irish Boy of the Rebellion."

KIMBERLEY (kĭm′bẽr-lĭ), a city and the capital of Griqualand West, in Cape Colony, South Africa, about 540 miles northeast of Cape Town. It has an exceedingly favorable climate, regularly platted streets, and numerous improvements, such as waterworks, electric street railways, a public library, and fine public buildings. Kimberley has a large jobbing trade. It was the seat of the De Beers Consolidated Company for some time prior to the war between England and the Transvaal Republic, and during that conflict was besieged by a formidable Boer army. The city is well connected by railroads and surrounded by a fertile agricultural and mining country. Within the immediate vicinity are some of the most celebrated diamond mines now operated. It was founded in 1871. Population, 1921, 29,519.

KINDERGARTEN (kĭn′dẽr-gär-tĕn), a name applied by Friedrich Froebel to a system of education devised by him for young children, the word signifying, in German, "garden for children." The system is based on the fundamental idea that the nature and faculties of children must necessarily be understood in order to secure their highest, right development. In this system the playful tendencies are employed by active realities in the form of objects. To secure this end it is necessary to make use of familiar objects in which the children are interested. The methods are necessarily conversational, the purpose being to cultivate freedom of expression on the part of the child. In this way the teacher, observing the characteristics of each learner, becomes enabled to develop perceptive power as well as moral and intellectual strength. Froebel held to the theory that all learning is pleasurable, and, when the playful activities are rightly employed, the children learn with ever-growing interest, thus developing mental and physical strength and a consciousness of right and wrong. The objects employed with greatest success in the kindergartens are such as toys, pictures, tools, flowers, beetles, and various other convenient and familiar forms that the child is allowed to handle, or use as objects for conversational lessons and for various simple drawings.

Froebel made use of five classes of objects known as *gifts.* They were grouped as *solids, surfaces, lines, points,* and *construction material.* These were employed in active work, which consisted of the use of the gifts in a logical order. Sand and plastic clay for modeling, paper and crayons for folding and coloring, strips and slats for intertwining and interlacing, and beads and buttons for stringing were among the materials for employing the activities.

By bringing the children in contact with the useful and convenient at an early age, it is possible to give them an early bent toward acquiring right tendencies, as well as to instill in them traits of industry and strength of character. To make the work most highly efficient, it is necessary for the teacher to possess and cultivate a true motherly spirit, through which the children under her care may be encouraged by the most wholesome relations. In this way growth is stimulated under right and spontaneous activities. From the incentive given by Froebel kindergartens rapidly spread to all civilized countries, and at present are a part of the school systems of the more populous communities of Canada and the United States.

Special training schools to teach kindergarten methods are maintained in the larger cities, whose purpose is to properly prepare the teachers for this class of work. The instruction given to young children is modeled with the view of preparing them for entrance into the regular primary and second primary departments of the school course. Associated with these kindergartens are manual training departments, whereby industrial teaching may be successfully carried through all the lower as well as the higher grades. A modified system of kindergartens has been introduced in the schools for blind and feeble-minded children. In recent years the study of kindergarten methods has been facilitated greatly by the publication of numerous periodicals and teachers' text-books. All the higher classes of normal schools have added departments for teaching kindergarten methods.

KINETOSCOPE (kĭ-nē'tō-skōp), or **Vitascope,** an instrument for producing a series of images with a very lifelike effect, commonly called *moving pictures.* The kinetoscope in general use consists of a magic lantern (q. v.) with a strong light, and the images are produced from a fine projecting lens in such rapid succession upon a screen that the figures appear to be in actual motion. The images are produced from pictures made on a long celluloid film about an inch in width, the length depending upon the series of pictures to be cast upon the screen. The pictures upon the film are a series of photographs and the exposure is about one-fiftieth of a second in duration, hence from fifty to sixty exposures pass before the eye in a second. Movement of the film through the instrument is obtained by a rotating mechanism, the film being unwound from one cylinder and wound upon another by a belt and pulley or an electric motor, and a revolving shutter is operated by the same mechanism that moves the film. This shutter alternately cuts off and admits the passage of the light between the film and the projecting lens, serving to permit the passage of light as the picture is in position for a brief time in front of the projecting lens and shutting it off as the picture is changed. This apparatus is used in scientific investigations, but chiefly to give entertainments.

KING, a title to designate the supreme ruler of a nation or country. The term was probably derived from khan and other eastern terms of similar meaning. The difference between a king and an emperor is not always one of power or extent, but is sometimes the result of historical developments. Though Louis Philippe was satisfied with the title of king, Napoleon III., who governed the same dominions, assumed that worn by Napoleon I. In very ancient times the king was considered the representative of God on earth and was absolute in ruling his domain. This distinction was lost or modified with the growth of the spirit of liberty among the people, and at present the powers of the king in most European countries are abridged by a constitution. Though the view that a king can do no wrong still prevails in some countries of Europe, the responsibility of his office is vested largely in a ministry, in which are inherent many of the functions formerly exercised by the sovereign.

KING, Clarence, geologist, born in Newport, R. I., Jan. 6, 1842; died Dec. 24, 1901. He graduated at the Sheffield Scientific School of Yale University in 1862, and the following year engaged in geological surveying in California. While in this work he explored the higher peaks

(Opp. 1508) WILLIAM LYON MACKENZIE KING

William Lyon Mackenzie King, statesman and premier of Canada, was born at Kitchener, Ontario, Dec. 17, 1874. He studied in the schools of his native city and the University of Toronto, where he received his degree in law. From 1896 to 1897 he was fellow in political economy at the University of Chicago and subsequently he held a like position at Harvard University. In 1900 he was made deputy of labor and for several years published the *Labor Gazette*. From 1909 until 1911 he was minister of labor in the administration of Sir Wilfrid Laurier. Subsequently he remained active in public service and is the author of much literature relating to legislation and affairs of labor and commerce. In 1921 he was elected premier of Canada, defeating Premier Meighen, who was running for re-election. In the election of 1926, following a dissolution of Parliament, his parties, the Liberals and the Liberal-Progressives, received increased strength, defeating the Conservatives under the leadership of Mr. Meighen, and he again became premier.

of the Sierra Navada Mountains and the gold fields along the western slope, and was the first to make a detailed survey of the Yosemite Valley. In 1867-72 he made a geological-topographical survey along the fortieth parallel across the widest part of the Cordilleras, from California to eastern Wyoming, and in 1879 was made first director of the United States geological survey. He resigned the position and devoted the remainder of his life to the practice of a mining engineer and made numerous scientific investigations. His publications include "Systematic Geology," "The Age of the Earth," and "On Mountaineering in the Sierras."

KING, Rufus, statesman, born in Scarborough, Me., April 29, 1755; died at Jamaica, Long Island, April 29, 1827. In 1777 he graduated at Harvard University, studied law, and entered upon a successful practice at Newburyport, Mass. He was elected a member of the Legislature in 1782 and to the Continental Congress at Trenton in 1784, where he introduced a resolution favorable to the abolition of slavery in the territories of the United States. In 1787 he was a member of the Federal constitutional convention, and in 1796 President Washington appointed him minister to England, in which position he served eight years. He was reëlected to the United States Senate in 1813, having served in that capacity before his appointment to England, continuing in that position until 1825, when he was again appointed minister to England. Owing to ill health, he resigned the following year and returned to the United States. As a statesman and orator King took high rank among the noted men of America, while as an opponent to slavery he was among the earliest and most persistent. His son, Charles King (1789-1867), was editor of the New York *American,* and from 1849 until 1863 served as president of Columbia College. He published "New York Fifty Years Ago."

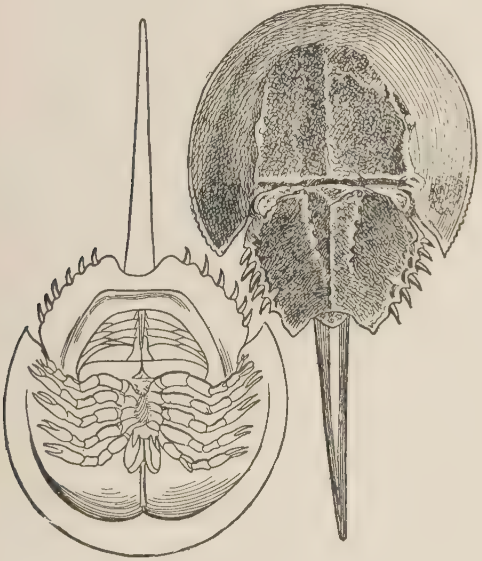
KING, William Rufus, statesman, born in Sampson County, North Carolina, April 6, 1786; died April 17, 1853. He graduated at the University of North Carolina in 1803, engaged in the practice of law, and was elected to the State Legislature. In 1809 he was elected to Congress as a Democrat, and in 1816 was made secretary of legation at Saint Petersburg. He removed to Alabama in 1819, where he was elected to the United States Senate, serving until 1844, when he was made minister to France by President Tyler. In 1846 he was again elected to the United States Senate, was reëlected to a full term, and in 1852 he was chosen Vice President of the United States on the ticket with Franklin Pierce, but died before entering upon the duties of the office.

KINGBIRD, the name of an American bird, frequently called bee martin and flycatcher. It is about eight inches long, the extended wings measuring fourteen inches. The bill is short and stout, the tail is slightly rounded and longer than the wings, and the color is bluish-ash. On the head is a small patch of bright red feathers, usually concealed, but capable of being erected as a crest. The nest is built in trees, in which four to six eggs are laid, and the parents defend it with remarkable bravery. It is not uncommon to see the kingbird pursue hawks and other birds for some distance to drive them from the vicinity of its nest, from which habit it has been named. The kingbird is useful in devouring noxious insects, but also eats fruits and seeds. It pursues flies and other insects while on the wing. The note is not musical or pleasing, but during the breeding season it seems to lose some of its petulance.

KINGFISHER; 2, KINGBIRD.

KING CRAB, or **Horseshoe Crab,** an animal of the genus *Limulus,* so named from its great size. Only five species are known, all of which appear to date from the Cambrian times. They are found in the tropical and northern coasts of America, in the Antilles, Japan, and the archipelago southeast of Asia. The head is composed of six fused segments. They have two pairs of eyes upon the upper surface, the head resembles a broad horseshoe, the mouth opens on the lower surface, and the tail is spine-like. Each side has six legs, a total of six pairs, but one pair is usually rudimentary. The inner side of the legs is armed with sharp spines to aid in retaining a hold upon the food or prey. As a means of obtaining food, the animal burrows in the bottom of the water, using the tail as a sort of a brace to burrow in the sand or mud. The average length of king crabs is about two feet. They do not possess power to swim, and, like turtles, appear to be in agony when placed upon their backs. See illustration on following page.

KINGFISHERS, a family of incessorial birds noted for their bright plumage, stout bill strong feet, and short tail. Several well-marked species are native to America and Europe, of which the common kingfisher is the best known. This species has the head feathers spotted with blue, while the sides of the neck are greenish and the bill is black. The length of the body is about seven inches. It frequents the coasts of lakes and banks of streams, where it engages in catching fish for food. In endeavoring to catch its prey the kingfisher occupies a position where it may watch the fish, and, when an opportune time occurs, it darts down quickly and secures its prey by diving. The smaller fish are swallowed whole, while the flesh of larger ones is picked from the bones, after being carried to the perch, and the bones are used in building its nest. The eggs are nearly white, six to eight in number, and the nest is guarded with considerable care against intrusion of other birds. A species of kingfisher native to the Himalayas is spotted and is known as the *fish tiger.* The *laughing jackass,* so called from its peculiar cry, is a large species native to Australia. It is singular that the kingfisher is the subject of many superstitions. This bird is celebrated in the ancient poetic lore and mythology. See **Halcyon.**



KING CRAB.

Lower View. Upper View.

KINGLAKE, Alexander William, statesman and historian, born at Taunton, England, in 1809; died in London, Jan. 2, 1891. He studied at Eton and Cambridge and in 1837 was admitted to the bar. In 1845 he witnessed the campaign of the French in Algeria, as a means of observing their methods, and likewise studied military tactics of the allied armies in the Crimea. He was elected to Parliament in 1857, where he held a seat for eleven years. His attention was devoted to politics and literature continuously after 1856, but his weak voice prevented him from making a deep impression, such as his ability warranted. His history entitled "The Invasion of the Crimea" consists of eight volumes, the first appearing in 1863 and the last in 1887. On account of its partiality to Lord Raglan, with whom he sojourned in the Crimea, it was severely criticised, but as a historic production holds a high rank.

KINGLET, the name of several small birds of the thrush family. The common kinglet of North America has yellow feathers with greenish markings and is one of the smallest perching birds. It is known locally as the *golden-crowned kinglet.* Another species, the *ruby-crowned kinglet,* has a red crest partly hidden by grayish feathers. These birds breed as far south as the Carolinas and in the spring move northward into Canada. Several species are native to Europe, including the *gold-crest,* which is noted for its song.

KING PHILIP. See **Philip, King.**

KINGS, Books of, the name of two books of the Old Testament. Commencing with the close of the history of David, they relate the events of the Hebrew state under Solomon and Rehoboam, give an account of the divided state under the rival dynasties of Israel and Judah, and carry the events down to the destruction of Jerusalem by the Babylonians. Many acts of Elijah and Elisha, the prophets, are detailed. According to the Talmud the Books of Kings were written by Jeremiah, but this is not admitted by Christian commentators, who generally treat the author as unknown.

KINGSLEY (kĭngz'lĭ), **Charles,** clergyman and author, born in Devonshire, England, June 12, 1819; died Jan. 23, 1875. He studied at King's College, London, and Cambridge, taking a degree at the latter in 1842. In 1844 he was called as rector to Eversley, in Hampshire, where he continued his labors until death, and there obtained a high reputation as a writer and pulpit orator. In 1859 he was appointed professor of modern history at Cambridge, and ten years later became canon of Chester. His writings include "Saints' Tragedy," "Alton Locke," "Westward Ho," "The Water Babies," "Alexandria and Her Schools," "Loose Thoughts for Loose Thinkers," "Hypatia," and "Two Years Ago." "Letters and Memories of His Life" was edited by his wife and appeared in 1877.

KINGSLEY, Henry, author, born at Holne, England, in 1830; died May 24, 1876. He was a brother of Charles Kingsley (q. v.). He graduated at Oxford and in 1853 went to Australia, where he remained five years. After returning to England, he became editor of the *Edinburgh Daily Review,* for which he was war correspondent in the Franco-German War. His writings include "Silcote of Silcotes," "Old Margaret," "Geoffrey Hamlyn," "Austin Elliott," and "Fireside Studies."

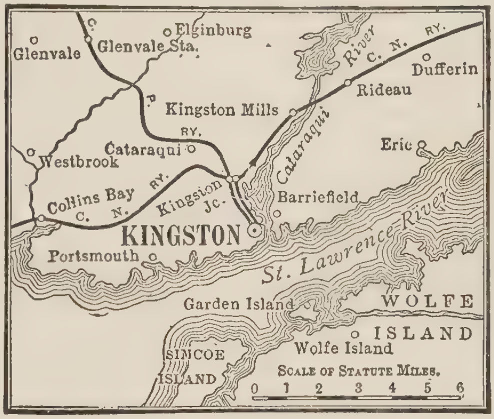
KING'S MOUNTAIN, the name of a mountain range in North Carolina, trending north and south through Gaston and adjoining counties. It was the scene of a battle on Oct. 7, 1780, between the British and Americans. The Americans were commanded by Benjamin Cleaveland and the British by Colonel Ferguson. The battle terminated in favor of the Americans, but they lost their brilliant leader, Col. James Williams. However, the British lost 716 men as prisoners and 390 were slain, including General Ferguson. The Americans lost only 28 killed and 60 wounded. This battle had a favorable influence upon the American cause.

KINGSTON (kĭngz'tŭn), a city and the capital of Jamaica, in the southeastern part of the island. It is defended by several forts, has an extensive commercial trade, and contains a number of fine buildings and modern facilities. The harbor is commodious and admits the largest vessels. It is strongly fortified. Several fine parks and gardens are maintained. Rum, sugar, tobacco, coffee, dyewood, and fruits are exported. Spanish Town became the capital in 1858, but the seat of government was moved to Kingston in 1872, since which time it has grown rapidly. Population, 1922, 58,036.

KINGSTON, a city in New York, county seat of Ulster County, on the Hudson River, 87 miles north of New York City. It is on the West Shore, the Walkill Valley and the Ulster and Delaware railroads. The chief buildings include the public library, the county courthouse, the armory, the city hall, and Kingston and Ulster academies. It has the Senate House, which was formerly the meeting place of the State Legislature and now contains a collection of relics. Large quantities of coal, timber, and building stone are obtained in the vicinity. It has a large trade in grain, lumber, and merchandise. The manufactures include glass, cement, farming machinery, cigars, railroad iron, flour, earthenware, and clothing. Kingston was first settled in 1652 by the Dutch, when it was called Esopus, and the name was changed to Wiltwyck in 1661. In 1664 it was taken by the English and the name was soon after changed to Kingston. Later it was the capital of the State, when, in 1777, the first State constitution was adopted here. It was incorporated as a city in 1872. Population, 1905, 25,557; in 1925, 28,099.

KINGSTON, a city of Ontario, capital of Frontenac County, on the northeastern shore of Lake Ontario, and on the Canadian Pacific, the Canadian National, and other railroads. It is finely situated on the bay of Quinte, near the source of the Saint Lawrence, and is connected with Ottawa by the Rideau Canal. Kingston is 165 miles from Toronto and 172 miles from Montreal. It has a large trade in manufactures and produce. The chief buildings include the Royal Military College, the University of Queen's College, the Anglican and Roman Catholic cathedrals, the penitentiary, and the public library. In the public park is a bronze statue of Sir J. A. Macdonald. It is strongly fortified. Being located near the Thousand Isles, it is frequented during the summer by many tourists.

Kingston has a fine harbor and extensive shipyards. The manufactures include locomotives, edge tools, hardware, railway cars, clothing, cotton and woolen textiles, and spirituous liquors. The streets are substantially paved and well lighted with gas and electricity. An extensive system of street railways supplies transportation facilities to all parts of the city and many interurban points. It was made the site of a French fort in 1673. The city was incorporated in 1838. Originally the name was Fort Frontenac, but this was changed to Kingston after the American Revolution. Population, 1921, 21,753.



KINKAJOU (kin̲'kȧ-jo͞o), or **Potto,** a small mammal found in the tropical parts of South America. It resembles the raccoon, is nocturnal in habits, and feeds upon insects and small animals. The fur is soft and gray and the tail is prehensile. This animal is tamed and treated as a pet in some parts of Central America.

KIOTO. See **Kyoto.**

KIOWA (kī'ô-wā), a tribe of North American Indians, formerly numerous in the upper region of the Missouri River. They were considered the most savage and warlike tribe of the prairies, where they were dreaded by the early settlers, and formerly carried their raids as far south as the Gulf of Mexico. In 1875 they were removed to Oklahoma, where they became more or less associated with the Comanches. At present they number about 1,125.

KIPLING (kĭp'lĭng), **Rudyard,** Anglo-Indian author, born in Bombay, India, Dec. 30, 1865. His father, John Lockwood Kipling, was connected with the Mayo School of Industrial Art, Bombay, for many years, and with the government museum in the same city. Rudyard Kipling was educated in India and England, and in 1880 did some writing for the Lahore *Civil and Military Gazette.* From this time on he continued a prolific writer and produced many interesting and popular works. His first writings include "In and Out of India," "City of the Dreadful Night," "Plain Tales from the Hills," and "The Light that Failed." He was associated for some time with H. Walcott Balestier and with him wrote "The Naulakha." After the death of his friend, he came to America and married his sister, Miss Balestier, residing for some time at Brattleboro, Vt., where he wrote many short stories and verses. Kipling has been able to put many realistic scenes into his writings, and make them popular by picturesque phrases and a pleasing style. His work entitled "The White Man's Burden" has been widely read. He wrote a popular poem, "The Recessional," on the occasion of Queen Victoria's Jubilee. His best known works not named above include "Flag of England," "Seven Seas," "Jungle Books," "McAndrews' Hymn," "Captains Courageous," "Day's Work," "Barrack-Room Ballads," and "Absent-Minded Beggar."

RUDYARD KIPLING.

KIRGHIZ (kĭr-gēz'), the name of a Tartar-Mongol nomadic people of Asia. They occupy a vast region which extends from the Caspian Sea to the Altai Mountains, and from the Syr Daria River and the Sea of Aral to the Tobol and the Irtish. This section is characterized by several mountain ranges. It includes many salt lakes and the great steppe region. In language these people belong to the Turkish stock and many have embraced the creed of Islam. The total number of this race is placed at 3,000,000.

KIRKSVILLE (kẽrks'vĭl), a city and the county seat of Adair county, Missouri, 65 miles southwest of Keokuk, Iowa. It is on the Wabash and the Quincy, Omaha and Kansas City railroads, and is surrounded by a fertile farming and dairying country. Bituminous coal is mined in the vicinity. Among the noteworthy buildings are the county courthouse, the high school, and a State normal school. It is the seat of the American School of Osteopathy and was long the residence of its founder, A. T. Still. Kirksville was first settled in 1840 and was incorporated in 1893. The manufactures include woolen goods, furniture, wagons, farm machinery, and cheese. Population, 1900, 5,966; in 1920, 7,213.

KIRKWOOD (kẽrk'wo͝od), **Samuel Jordan,** statesman and war governor of Iowa, born in Harford County, Maryland, Dec. 20, 1813; died in Iowa City, Sept. 1, 1894. In 1835 he settled in Ohio, where he studied law, and in 1843 was admitted to the bar. In 1855 he settled in Iowa, where he served in the State senate, and in 1859 was elected Governor as a Republican. He was reëlected Governor in 1861, in which capacity he supervised the enlistment of fifty regiments of cavalry and infantry, and in 1866 became United States Senator. In 1875 he was elected Governor of Iowa a third time, to fill the unexpired term of James Harlan, and in 1876 was again elected to the Senate. He resigned his seat in the Senate in 1881 to enter the Cabinet of President Garfield as Secretary of the Interior. Kirkwood attained a marked reputation as one of the noted "war governors" and was likewise distinguished as a legislator.

KIRSCHNER (kẽrsh'nẽr), **Lola,** novelist, born in Prague, Hungary, in 1854. She is generally known under her pseudonym, Ossip Schubin, and takes high rank as a writer of Austria. Her parents instructed her privately at their estate near Lochkov, and afterward she studied in Brussels and Rome. Being a keen observer and a clever writer, she produced rapidly, and many of her works have been translated from the German. They include principally "Among Ourselves," "The Broken Wing," "O, You, My Austria," "Uncommon Stories," and "Hail, You, in Victor's Wreath."

KISHINEV (kē-shē-nyôf'), or **Kishineff,** a city of Russia, capital of the government of Bessarabia, 85 miles northwest of Odessa. It is located on the Byk, an affluent of the Dniester, and is at the junction of several railways. The chief buildings include a public library, two gymnasia, several large Greek churches, and many substantial business blocks. It is important as a market for cereals and live stock and has manufactures of tobacco, clothing, and machinery. The inhabitants consist of Russians, Jews, Bulgars, Tartars, and Moldavians. It has been a possession of Russia since 1812. In 1905 and 1906 it was the scene of severe persecutions of the Jews. Population, 1921, 129,728.

KISS, August, noted sculptor, born near Pless, Germany, Oct. 11, 1802; died in Berlin, March 24, 1865. He secured training at the royal foundry in Gleiwitz and under the eminent sculptor Rauch. His first great work was a model of the celebrated group "The Amazon and the Tiger," which was cast in bronze at a cost of $20,000, the amount being raised by public subscription. Among his other noted productions are "Saint Michael Overthrowing the Dragons," "Statue of Frederick The Great," "Statue of Saint George," and "Tiger Destroying a Serpent." The works of Kiss stimulated a taste for sculpture and aided materially in developing German art.

KITCHEN CABINET, the name applied in American politics to a group of men during the administration of Andrew Jackson. These men were supposed to influence the action of the President more than the members of the Cabinet, though they were not important as government officials. Those who were included with these unofficial advisers were William B. Lewis, Duff Green, Isaac Hill, Amos Kendall, and Francis P. Blair, Sr., editor of the *Globe.*

KITCHENER (kĭch'ẹn-ẽr), **Horatio Herbert,** general, born in Gunsborough Villa, Ireland, June 24, 1850; died June 5, 1916. His father, Henry Horatio Kitchener, was lieutenant colonel in the English army. He was educated at the Royal Military Academy, Woolwich, and in 1871 entered the army as a lieutenant of royal engineers. The same year he enlisted under French colors and participated in the Battle of Le Mans, where the French army under Chanzy was defeated. He was engaged as surveyor in Palestine and Cyprus in 1874-82, and in the latter year became major of cavalry for service in Egypt. His success as a commander caused his rapid promotion and in 1884 he was engaged to keep open the communication of the Nile. Although he failed in this, he rendered valuable service in the attempt to relieve General Gordon at Khartum. In 1886 he was pasha in the native army of Egypt and governor of Suakin, which position he held until 1888, when he attained to the rank of colonel in the British army. He was made commander of the Egyptian forces in 1892, leading a successful campaign against the Dervishes, who were finally defeated in the battles of Omdurman and Khartum. Soon after he returned to England and was given a vote of thanks by both houses of Parliament and a grant of $150,000, and in 1899 became Governor General of the Sudan. In 1900 he was made commander in chief in the Boer War in South Africa, which position he held until peace was declared, in 1902, when he was given chief command in India. At the beginning of the Great European War, in 1914, he was put in charge of the work of organizing the British campaign, which he did with marked efficiency. He was drowned while on a mission to Russia, off the Orkney Islands, where the steamship *Hampshire* was sunk by a mine.

HORATIO HERBERT KITCHENER

KITCHENER. See **Berlin, Ontario.**

KITE, the common name of many birds of prey. They belong to the falcon family, but differ from the true falcons in having shorter legs and longer wings. The wings are pointed, the tail is deeply forked, and the flight is easy and graceful. The *swallow-tailed kite* is common to the southern parts of the United States. It has glossy black feathers on the back and wings and the lower part is white.

KITE, a contrivance formerly used only as a toy, but now employed for various economic and scientific purposes. It is constructed of a light framework, covered with paper or cloth, and is raised into the air by the wind acting upon it. The effect of the wind upon a kite is similar to that upon a sail, and depends upon the contrivance being held by a string in a way that the wind will be most effective in lifting it. Kites are constructed chiefly in the form of dragons, and soar upward to the extent of the string by which they are held. Besides furnishing the means of healthful pastime for children, kites are used in advertising, photographing landscapes, meteorological observations, communicating between stranded ships, and determining the temperature in the clouds. Benjamin Franklin made electrical experiments by using the kite. The forms used for amusement usually have a tail, which gives steadiness to the kite in sudden flaws of wind.

KITTREDGE, Alfred Beard, public man, born in Cheshire Co., N. H., March 26, 1861; died May 4, 1911. He studied in the public schools and at Yale University and was admitted to the bar in 1885. In the latter year he removed to South Dakota, and established a successful law practice in Sioux Falls. In 1889 he was elected a member of the State Legislature, serving until 1903. He was a delegate to several national conventions of the Republican party, and was local attorney for a number of railroad companies. In 1901 he succeeded James H. Kyle as United States Senator, and was reëlected in 1903.

KLAMATH (klă'mȧt), a river in California, rises in the southern part of Oregon and flows into the Pacific Ocean about twenty miles south of Crescent City. In a part of its course it flows through the Klamath lakes, but the greater part of its distance is through deep and narrow canyons. Fine forests of cedar and redwood abound in its valley. It is 275 miles long.

KLAMATHS, the name of several tribes of Indians found originally near the Klamath lakes of southern Oregon and northern California. They are naturally of a peaceable disposition, but become aggressive when they are assailed, and have made material advancement in industrial arts. The early settlements made in California by the whites led to troubles in 1851, but peace was soon restored by a treaty. They ceded a large tract of land to the United States in 1864, reserving a productive region of about 1,200 square miles, on which they conduct agriculture, lumbering, and trading.

KLAUSENBURG (klou'zẹn-bo͞ork), or **Kolozsvăr,** a city of Rumania, capital of the county of Klausenburg, 125 miles northwest of Hermannstadt. It is the seat of the Francis Joseph University, which has a library of 75,000 volumes and is attended by 750 students. Other institutions include a museum, a botannical garden, a Froebel institute, and a Roman Catholic cathedral. The manufactures are flour, cloth, beet sugar, cigars, and machinery. German colonists founded the city in 1178. The larger part of the inhabitants are Magyars of the Protestant faith. Population, 1922, 61,184.

KLEIST (klīst), **Heinrich von,** poet and playwright, born in Frankfort-on-the-Oder, Germany, Oct. 18, 1777; died Nov. 21, 1811. He served with distinction in the Prussian army against Napoleon and, after being imprisoned as a captive, committed suicide. Kleist is celebrated as a writer and is recognized as a man of remarkable ability in producing poetic dramas. Interest in his production has been revived within recent years. His writings include "The Family of Schroffenstein," "The Broken Vessel," "The Prince of Hamburg," "The Battle of Hermanns," and "Michael Kolhaas."

KLEPTOMANIA (klĕp-tō-mā′nĭ-ȧ), a species of insanity in which is displayed an irresistible desire or propensity to steal and hoard. In a case of this affection it is considered that the afflicted person, while not absolutely insane, is nevertheless unaccountable and his acts are not held criminal. The symptoms usually consist of peculiar motives in stealing and hoarding, peculiar judgment as to the character of the commodities taken, and a characteristic interest in many articles of little value.

KLONDIKE (klŏn′dīk), a small tributary of the Yukon River, which has a general course toward the west, and flows into the Yukon near Dawson. Valuable deposits of gold were discovered in the region by George Carmack, a native of Illinois, in August, 1896, and subsequently the district became known as the Klondike region. This region is largely in Canada, but extends along the Yukon across the boundary into Alaska. In 1897 many prospectors and miners proceeded to the Klondike region, and in that year secured fully $2,000,000 in gold. Since then the work has progressed continuously during the summer season, and large quantities of the valuable mineral have been procured.

The precious metal occurs largely in a free state in the form of nuggets and grains, and is separated from the gravel and dirt by washing. As a rule the washing is done in the summer season, but much of the pay dirt is excavated from the frozen bed of muck at all times of the year. Formerly it was extremely difficult to reach this section, but a railway is now operated from Skagway to Hazelton, on the White Horse River, a tributary of the Yukon. Another line has been projected and partly built by the Grand Trunk Railway Company, extending from the eastern part of Canada to Dawson, the chief town of the Klondike.

KLOPSTOCK (klŏp′stŏk), **Friedrich Gottlieb,** author and poet, born in Quedlinburg, Germany, July 2, 1724; died March 14, 1803. His father was a public official in moderate circumstances who exercised care in promoting the son's education. He studied in his native town, at Jena, and at the University of Leipzig. In 1746 he contributed to periodicals published at Leipzig and composed his epic poem, "Messias," which appeared in 1748. The high character of this work attracted general attention and established his reputation. He was a teacher from 1748 until 1750 and in the latter year spent some time in Zurich. In 1771 he was given a pension by the Danish government, amounting to $300, and later received a pension and an honorary title from the Grand Duke of Baden. His writings exercised an influence for nationalism among the German states, and in a marked way counteracted French tendencies in the literary and social life of Germany. Among his productions are numerous contributions to *The Bremen Beiträge* and to several periodicals at Hamburg His chief works include "The Death of Adam," "Wingolf," "Solomon," "Odes," and "The Art of Poetry." Many of his works have been widely translated, being popular for their dignity and lofty thought.

KNEIPP (knīp), **Sebastian,** priest and author, born in Stefansried, Germany, in 1821; died June 17, 1897. He is noted chiefly because of his invention of a special kind of water cure. While studying to become a priest, he gave much attention to the study of medicine and the treatment of diseases by the application of water. The chief factors in the Kneipp treatment include fresh air, water, sunshine, and definite activity at stated hours. Many establishments in which his course of treatment is given are located in the leading cities of the world, including a number in Canada and the United States. He published "My Water Cure," "So Shall You Live," and "The Treatment of Children in Health and in Disease."

KNIFE. See **Cutlery.**

KNIGHT (nīt), **William Angus,** educator and author, born at Modrington, Scotland, Feb. 22, 1836. He studied in the University of Edinburgh and in 1876 he was made professor of philosophy in the University of Saint Andrews, where he taught successfully about 25 years. In the meantime he was examiner of various institutions of learning, including the University of New Zealand and the University of London. As an educator he exercised a wholesome influence upon young men. His writings are thoughtful and practical. They include "Philosophy of the Beautiful," "Philosophical Classics for English Readers," "Christian Ethics," "Wordsworth's Works and Life," "Dove Cottage from 1800 to 1900," and "Lord Monbaddo and Some of His Contemporaries." He died March 4, 1916.

KNIGHTHOOD, Orders of, a term applied to organized and constituted orders or bodies of knights. Two classes of orders of knighthood are generally recognized, one constituting fraternal associations and the other honorary. The associations or fraternities possess property as independent bodies, to which class belongs the Hospitalers, Templars, and Teutonic Knights. Honorary associations were established by sovereigns within their own dominions and embrace most of the orders now maintained in European countries, such as the orders of Saint George, Golden Fleece, Saint Michael, and Holy Ghost. The orders of the Garter, Saint Patrick, the Thistle, Saint George, and several others are British. The Star of India is an order of India. Each order of knighthood in the different countries has an appropriate insignia, with which is included a badge, ribbon, collar, jewel, and star. The Normans first introduced knighthood into England as a feudal institution, but at present a knight holds a title of honor next below a baronet. Since the 16th century it has been considered a title of honor conferred as a reward for personal merit or for service rendered the crown or the country. The title carries with it the right to prefix *sir* to the Christian name and the wife is legally called *dame*, though *lady* is by courtesy her designation. Knights who belong to no special order of knighthood are properly knights bachelor. Those belonging to an order take the name of such order, as knight of the Garter and knight of the Bath. The rank is not hereditary. See **Chivalry.**

KNIGHTS OF LABOR, a fraternal labor association organized at Philadelphia, Pa., in 1869. The object of the organization is to protect the laboring classes, ameliorate the condition of the workingman, and promote industrial interests. It constitutes one of the most intelligent associations of the wage workers in the United States. The membership declined within recent years, and the American Federation of Labor superseded it as a working organization.

KNIGHTS OF PYTHIAS (pĭth'ĭ-ạs), a fraternal and benefit association organized in 1864, whose purpose is to exemplify true and noble friendship. Three degrees are conferred, those of page, esquire, and knight, and the general control is vested in the supreme lodge, which likewise has charge of the uniform rank and the insurance branch. It is based upon the friendship of Damon and Pythias, two celebrated Pythagoreans of ancient Syracuse. Dionysius the Elder, tyrant of Syracuse, had condemned Pythias to death, but permitted him to visit his wife and family once more on the condition that Damon take his place in suffering the penalty, in case Pythias should not return. The latter returned before the time set for the execution, which so impressed Dionysius that both were set free. In 1925 the Knights of Pythias had 818,535 members. The total death claims paid by the insurance department equal $28,947,608.

KNIGHTS OF THE GOLDEN CIRCLE, a secret society of the United States, organized in 1855 to advance the slave-holding interests of the South. The original purpose was to found a government in the vicinity of the Gulf of Mexico, which was to be the seat of vast slave-holding plantations. As a means to further organization, numerous lodges, or *castles,* were maintained. The members of this organization were not only numerous in the South, but were represented very extensively in the North. They had not less than 40,000 members in Indiana and a corresponding number in many other states. In the presidential campaign of 1860 they were a factor in defeating the Democrat party since they supported the Southern wing instead of Stephen A. Douglas.

KNITTING, the art of weaving a single thread so as to form a kind of fabric. It is done by means of knitting needles, which are made of various sizes to suit the fineness of thread used, usually of ivory or steel. Formerly the work of knitting was done wholly by hand, but the larger part of knit goods is now made with knitting machines. The first knitter was invented in 1589 by William Lee of England, but many improvements have been introduced to make these machines highly utilitarian. Those in general use are rotary or circular in form, fitted to produce a circular web. They have a circular series of vertical parallel needles that slide in grooves in a cylinder, and are raised and lowered successfully by an external rotating cylinder which has cams on the inner side that act upon the needles. A hook at the end of each needle serves to draw down the thread so as to form a loop as it is depressed. This loop is slipped off over the hook when the needles are again elevated, thus forming a part of the web as the next hook is joined to it. Within the circle is an opening for the web, which is held in position by a weight attached to the lower end of it. The invention of the modern knitting machine has revolutionized the manufacture of knitted fabrics, such as hosiery and underwear.

KNOT, a fastening or twisting together of the ends or parts of one or more threads or ropes, or the looping of such threads around some other object so as not to come apart easily. The art of tying knots is important on shipboard, and those in use among seamen require much skill in the adjustment. They include about 200 different kinds, but of this number only a comparatively few are in general use. These include the so-called reef knot, figure of eight knot, bow line knot, running bow line knot, rope-yarn knot, manrope knot, and Matthew Walker knot.

KNOWLES (nōlz), **James Sheridan,** dramatist, born at Cork, Ireland, May 21, 1784; died Nov. 30, 1862. His family removed to London when he was eight years old. In 1806 he made his début as an actor in Dublin and later taught elocution at Belfast and Glasgow. In the meantime he began to write short dramatic works. These were published in 1843 under the title "Dramatic Works." He was granted a pension in 1849, having abandoned the stage, and subsequently became a minister in the Baptist denomination. His later dramas include "Alfred the Great," "William Tell," "The Love Chase," "The Hunchback," and the "Rose of Aragon."

KNOW-NOTHINGS, a name given to the

members of the American party, which was organized in the United States in 1855. This appellation was applied because the party was a secret organization and, when asked about its affairs, the members professed to know nothing about them. Among its tenets were that naturalization should be granted only after 21 years' residence, that America should be governed only by Americans, and that allegiance to any foreign power should constitute a bar to selection for office. The party was organized for an active campaign in 1855, when it carried the state elections of Kentucky, New York, California, and most of New England. Millard Fillmore was its candidate for President in 1856 and received 874,534 votes, but in the electoral college obtained only eight votes, those cast by the State of Maryland. After the election of 1856 the party became disorganized and most of its members went over to the newly organized Republican party.

HENRY KNOX.

KNOX (nŏks), **Henry,** soldier and patriot, born in Boston, Mass., July 25, 1750; died at Thomaston, Me., Oct. 25, 1806. At the age of eighteen years he began to train in a company of grenadiers, by whom he was chosen commander. His education was secured in a common school, after which he engaged as a bookseller, but his military ardor soon led him to join the army and labor actively in the interest of the colonies. At the battles of Bunker Hill, Trenton, Brandywine, Germantown, and Monmouth he rendered efficient services. He took an active part during the siege of Yorktown. His earnestness won the special confidence and esteem of Washington. He was appointed Secretary of War in 1775 and, when Washington became President, he again secured an appointment to the same position. In that capacity he exhibited rare ability and endeared himself to his countrymen. In 1794 he withdrew from public life and retired highly honored to a homestead on the Penobscot in Maine. Subsequently he was chosen a member of the State Legislature.

KNOX, John, reformer and clergyman, born near Haddington, Scotland, Nov. 24, 1505; died Nov. 24, 1572. He was educated in his native town and at the University of Glasgow, but left the university before completing the course. In 1542 he became an advocate of the reformed faith and preached at the castle of Saint Andrews to the Protestants. When Saint Andrews was taken by the French, he was carried a prisoner to France, but at the solicitation of Edward VI. was released from captivity in 1549. The religious disturbances common to Scotland at that time made it unsafe for him, and he located at Frankfort-on-the-Main, Germany, and later at Geneva, preaching the Protestant faith and devoting his time to religious culture.

He returned to Scotland in 1559, where he was a leader in the reform movement until his death. The unfortunate Mary, Queen of Scots, landed in Scotland in 1561. Two opposing parties formed quickly, in which Queen Mary and Knox were the principal opponents in relation to religious doctrines. The institution of mass in the royal chapel was the occasion of clear and forcible sermons by Knox, and, when the massacre of Saint Bartholomew occurred in France, he again preached sermons that thrilled the Protestants with stronger sentiments against the Catholics, who were supporting Mary. Though suffering from an apoplectic stroke, he continued his active work until shortly before his death. Knox possessed the faculty of a leader to a remarkable extent, was God-fearing, and stands in history as one of the most eminent early divines of Scotland. He wrote "Admonition of the Professors of God's Faith in England," "Confession of Faith," "First Book of Discipline," and "History of the Reformation of Religion in Scotland."

KNOX, John Jay, financier and author, born in Knoxboro, N. Y., March 19, 1828; died in New York City, Feb. 9, 1892. He graduated from Hamilton College in 1849, entered the banking house of his father, and from 1857 to 1862 conducted a private banking business at Saint Paul, Minn. In the latter year he was appointed chief of the mint by Secretary Chase, and in 1872 became comptroller of the currency. It was largely due to his influence that the partial demonetization of silver was effected in 1873 and the resumption of specie payments was brought about in 1879. In 1884 he became president of the National Bank of the Republic in New York City. He published "History of the Various Issues of Paper Money by the United States."

PHILANDER C. KNOX.

KNOX, Philander Chase, statesman, born at Brownsville, Pa., May 4, 1853. He was educated in Mount Union College, Alliance, Ohio, where he graduated in 1872, and subsequently studied law in a private office at Pittsburg, Pa. In 1876 he was Federal district attorney for the western district of Pennsylvania, and the following year entered a partnership in a law firm at Pittsburg, where he was counsel for the Carnegie Steel Company. He was chosen president of the Bar Association of Pennsylvania in 1897. President McKinley made him Attorney-General as successor to John W. Griggs. He served efficiently in this position until 1904, when he resigned to succeed M. S. Quay in the United States Senate. In 1905 he was elected to a full term, but resigned in 1909 to enter the Cabinet of President Taft as Secretary of State. He died Oct. 12, 1921.

KNOXVILLE, a city in Tennessee, county seat of Knox County, on the Tennessee River, 110 miles northeast of Chattanooga. It is on the Southern, the Louisville and Nashville, the Knoxville and Augusta, and other railroads. The site is at the foothills of the Clinch Mountains, which have much fine natural scenery. Among the noteworthy buildings are the post office, the county courthouse, the public library, the State Agricultural College, the University of Tennessee, the Tennessee School for the Deaf, the Eastern State Hospital, and Knoxville College (for training colored pupils). The surrounding country produces vast quantities of coal, zinc, and marble. Among the manufactures are flour, machinery, cotton and woolen goods, stoves, furniture, leather, soap, car wheels, and ironware. It has well graded and paved streets, waterworks and sewerage systems, and a large trade in produce and merchandise. Knoxville was settled in 1787, was the capital of the State from 1786 until 1811, and became a city in 1815. It was occupied by a Union army of 12,000 men under General Burnside in November, 1863, and a siege was laid by Longstreet. Sherman's army was sent to relieve Burnside in the latter part of 1863, after which the Confederates were compelled to raise the siege. Population, 1920, 77,818.

KOALA (kô-ä'lȧ), or **Kangaroo Bear,** a bear or sloth native to Australia. It is a marsupial mammal. The tail is rudimentary, the head is small, and the color is ash-gray. It feeds largely on the leaves and tender shoots of the blue-gum tree. The length of its body is about two feet and the claws are well fitted to climb trees, in which it spends the greater portion of the time. Koalas live in pairs, are very tenacious of life, and the young are carried on the back of the mother when they have outgrown the marsupium.

KOBE (kō'bâ), a seaport city of Japan, in the southern part of the island of Hondo, on the Bay of Osaka. It has a safe and commodious harbor, extensive shipyards, and large railway shops. Direct steamboat communications are maintained between it and the leading ports of the world. Paper, clothing, saki, pottery, and machinery are among the leading manufactures. The principal buildings include those of the government, several schools and theaters, and a number of clubhouses and Buddhist temples. The streets are paved substantially and are improved by electric lighting and street railways. It has an extensive commerce with Great Britain, Germany, France, and the United States. Population, 1922, 688,516.

ROBERT KOCH.

KOCH (kôk), **Robert,** eminent bacteriologist, born in Klausthal, Germany, Dec. 11, 1843. He graduated from Göttingen, where he received a degree in medicine, and soon after entered upon the practice in a town near Hanover and later at Wollstein. In 1881 he attracted general attention by his efficient expert testimony in a case of poisoning, and was appointed member of the sanitary commission at Berlin and professor of an imperial school of medicine. The following year he announced the discovery that the existence of bacilli is the cause of tuberculous diseases, and soon after published the view that the bacillus tuberculosis is a specific germ causing those diseases. The German government dispatched him to Egypt and India in 1883 for the purpose of studying the causes and prevention of cholera. This led to the discovery of the microbe of cholera, which he found in the water of a cistern and named it *Asiatica.* On returning to Germany he became privy councilor and was made rector of the Imperial Institute of Hygiene. In 1890 he announced that he had discovered a lymph by which the bacillus tuberculosis could be expelled from the human system without injury to the patient, and that its application to consumption would greatly relieve or cure patients. His services to mankind are of inestimable value, being alike important in the prevention and cure of diseases. In 1901-02 he was called to various countries to lecture on the theory of bacilli as related to food and diseases. Among his writings are "Researches Regarding Tuberculous Diseases," "What our Physicians Know and are Able to Do," "Remedies for the Cure of Tuberculosis," and "Diseases Due to the Infection of Wounds." He died May 27, 1910.

KOHINOOR (kō-ĭ-nōōr'), or **Kohinur,** a famous diamond now owned by the crown of Great Britain. It was secured from India when the Punjab was annexed. Originally the weight was 793 carats, but it was reduced by cutting until now it weighs only 102¾ carats. The present value is about $600,000.

KOHLER (kō'lẽr), **Joseph,** jurist and author, born at Offenburg, Germany, in 1849. He was educated at Freiburg and Heidelberg and in 1878 was made professor at Mannheim. In 1888 he was appointed professor of law at the

University of Berlin, where he served efficiently a long term of years. Besides contributing to current periodicals, he wrote extensively on the civil law of Germany and contributed to the "History of Comparative Jurisprudence." Among his many works are "Researches Relating to Patent Rights," "Penal Laws of China," "Effect of Law upon Civilization," "Trial-law of India," "Treatise of Patent and Industrial Law," and "General Principles of Punishment." He published a number of essays and poems and is the author of a work entitled "Ancient History Relating to Marriage."

KOKOMO (kō'kō-mō), a city in Indiana, county seat of Howard County, 50 miles north of Indianapolis. It is on the Pennsylvania and the New York, Chicago and Saint Louis railroads, and on a network of well-improved highways. The chief buildings include the high school, the county courthouse, and several churches. It has a fine park, electric street railways, and a large trade in produce. The manufactures include stoves, carriages, lumber products, flour, glass, furniture, and machinery. The place was settled in 1844 and incorporated in 1865. Population, 1920, 30,067.

KOLA (kō'lȧ), or **Cola,** the name of a plant native to the tropical regions of Africa, but now cultivated for its fruit in Brazil and the West Indies. The fruit, known as *kola nut,* is about an inch long, has a reddish-gray color, and its odor resembles that of nutmeg. It contains about two per cent. of alkaloid caffeine. Kola is used to some extent in the preparation of a drink similar to coffee. It has digestive and stimulating properties.

KONG MOUNTAINS, a mountain chain of Western Africa, stretching along the northeastern boundary of Liberia, and attaining to heights of about one mile above sea level. In these mountains the Niger has its source, flowing from them toward the northeast. The district is populated by Mohammedans. It contains valuable timber and minerals. The slopes and valleys are highly fertile, producing grasses, cereals, and fruits.

KONGO. See **Congo.**

KÖNIGGRÄTZ (kē-nĭg-grâts'), a fortified town of Bohemia, on the Elbe River, seventy miles east of Prague. It has connections by railways and a considerable local trade. It is noted in history on account of an important battle between the German army of Prussia and the forces of Austria, which occurred July 3, 1866, and resulted in the defeat of the Austrians. As a consequence of the battle Prussia became the supreme power in the German states. Venice was ceded to Italy, and Hungary became constitutionally independent. The battle is better known by the name of Sadowa, from an adjoining town. Königgrätz is an old town. It has a fine library, a Gothic cathedral, and a theological seminary. Population, 1922, 10,302.

KÖNIGSBERG (kē'nĭgs-bĕrg), a city and seaport of Germany, capital of the province of East Prussia, on the Pregel River, about five miles from Frisches Haff, an inlet from the Baltic Sea, and 330 miles northeast of Berlin. It occupies a fine site on both sides of the Pregel, which is crossed by many stone and steel bridges. The streets are clean and well paved with stone and asphalt. Ample transportation facilities are furnished by steamships, steam railroads, and electric railway lines. An island in the river, at the west end of the city, contains the fort of Friedrichsburg, and other fortifications include twelve forts in the main walls on both sides of the river. It has extensive manufactures of clothing, chemicals, machinery, textiles, cigars, earthenware, and musical instruments.

The city is famous for the University of Königsberg, which dates from 1544, when it was founded as a Lutheran institution. At present it has 148 teachers, about 1,000 students, and a library of 225,000 volumes. Kant taught at the university nearly fifty years and a beautiful monument was erected to him in 1864. Among other famous teachers are Herbart, Bessel, Herder Neumann, and Von Baer. The city has several fine schools, seminaries, colleges, and churches. It contains many valuable buildings, public parks, and several statues and monuments. The cathedral is one of the finest in Europe. Frederick I. was crowned King of Prussia at Königsberg, and in 1861 similar ceremonies were celebrated when William I. ascended the throne. Population, 1920, 245,853.

KÖNIGSHÜTTE (kē-nĭgs-hüt'tẹ), a city of Germany, in the province of Silesia, near the western frontier of Poland. It has communication by railroads and electric railways, paved streets, and systems of waterworks and sewerage. In its vicinity are vast coal, iron, and zinc mines. The manufactures include ironware, machinery, and clothing. It is comparatively a new city and owes its prosperity to the development of mining and manufacturing. Population, 1905, 66,042; in 1920, 72,642.

KOODOO (ko͞o'do͞o), or **Kudu,** the name of a large antelope found in Africa. It is about four feet high. The color is grayish-brown, with several vertical stripes of white on the sides. The flesh is considered very nutritious, hence it is hunted almost to extermination. This animal is easily domesticated and is grown in some places for its milk and flesh. The male has horns nearly four feet long. They are twisted spirally.

KOORDISTAN (ko͞or-dĭs-tăn'), or **Kurdistan,** a region of eastern Turkey in Asia, including an area of about 80,000 square miles. The northern boundary is formed by Armenia and the eastern by Persia, extending into the latter country as far as Lake Urumiah. The inhabitants are principally Kurds, who adhere to the Mohammedan religion, but differ from the Turks in language. They are fanatical in their religious views and extremists in government. The larger portion follow a pastoral life. They have been a source of strength to the Turks against the Armenians, but have opposed the spread of Turkish customs and language. The entire population is estimated at 2,750,000.

KOOTENAIS, or **Flatbows**, a North American Indian tribe, resident in Montana, Washington, and British Columbia. Their chief seat in British Columbia is in the vicinity of Lake Flatbow. They support themselves mostly by hunting and fishing. The Kootenais are peaceable and quite industrious.

KOOTENAY (kōō'tē-nā), or **Kootenai**, a river of North America, which rises in the Rocky Mountains of British Columbia. It passes from British Columbia through the states of Montana and Idaho, thence reënters Canada, where it passes through Kootenay Lake, and after a course of 400 miles joins the Columbia River. Navigation is insignificant, owing to numerous rapids and the tortuousness of its course. The valley of the Kootenay is rich in iron and other minerals.

KORAN (kō'ran), or **Al Koran**, the book containing the sacred scriptures of the Mohammedan religion. It is made the basis of all civil, military, and social transactions among the Moslems. The name is usually written Al Koran; that is, *The Koran,* meaning originally "The reading," or "That which is to be read." The Mohammedans teach that the book is coeval with God, having existed eternally. In the beginning of time the transcript was made in rays of light upon gigantic tablets that were situated in the highest heavens, near the throne of the Almighty. Gabriel, the angel, is said to have communicated the different portions to Mohammed within a period of 23 years, both at Mecca and Medina. Mohammed dictated the Koran in manuscripts to a scribe, who preserved them in written form for the followers of the faith.

At first the different portions appeared without definite arrangement, but, after the death of Mohammed, Abu Bekr directed Zaid Ibn Thabit of Medina to collect them into a volume. Later this edition was revised by Caliph Othman, and in the thirtieth year of the Hegira, the year 652 A. D., it was published. This revision contains 114 chapters, and at the head of each is a title which indicates the nature of its contents, these often being strange sounding, including such as *The Cow, The Star, The Towers, The Poets,* etc. The chapters begin with the introduction: "In the name of God the Merciful, the Compassionate."

Among the tenets taught in the Koran are that there is but one God, and he is all-wise, merciful, and everlasting; that there is a punishment for the wicked and a reward for the just; and that all peoples will go to their reward at the day of judgment. Christ is assigned a place in the highest or seventh heaven, where he lives in the presence of God. When mankind becomes wayward and forsakes the path of righteousness, prophets are sent to direct them toward the true God. Among the prophets sent to earth are Adam, Noah, Abraham, Moses, Jesus, and Mohammed, the last named being the greatest of all the prophets. It teaches the doctrine of good and bad angels, outlines severe condemnation for the idolatrous, and describes heaven as a place in which seven degrees of award for righteousness will be made, these being called first, second, third, etc., heaven, and ranging from entertainment by music to the supreme joy of meeting God face to face.

The decrees of God are held to be unchangeable, the doctrine of predestination is taught, and all are admonished to fast, give alms, repeat prayers, and go on pilgrimages to Mecca and Mount Ararat. In praying it is advised that five prayers be said a day, during which the face is to be turned toward Mecca. When ready for prayer, it is necessary to perform the act of purification, which consists of bathing the hands, for which purpose sand or dry dust may be used where water is not obtainable. The laws of Moses and the decrees of Jewish rabbis are adhered to in the treatment of divorce, polygamy, inheritance, and other practices. In language the Koran is elegant and pure, and is considered the ideal production of Arabic classics. The Moslems think that no human being is capable of producing its equal. In size the Koran is about the same as the New Testament, the work containing 77,639 words. Innumerable commentaries on the Koran have been published. It is claimed that the Tripoli library in Syria at one time contained fully 20,000 different treatises on this book.

KORDOFAN (kôr-dō-făn'), a region in the Egyptian Sudan, located between Darfur and the White Nile. It has an area of 95,125 square miles. Much of the surface is level, but it is characterized by isolated hills, and during the rainy season is covered with a rich vegetation. In the hot and dry season the climate is quite unpleasant to Europeans. Water is obtained chiefly from wells, except from June to October, when the rainfall is abundant. The inhabitants consist chiefly of Arabs and Berbers, who engage in stock raising and the cultivation of cotton, sesame, tobacco, and millet. El Obeid is the capital and chief town. The population is estimated at 300,000.

KOREA. See **Corea.**

KÖRNER (kẽr'nẽr), **Karl Theodor,** poet, born in Dresden, Germany, Sept. 23, 1791; died Aug. 26, 1813. He first studied at the Academy of Freiberg and later at Leipzig and Berlin. In 1813 he was made dramatist at Vienna, but gave up his literary career to become adjutant in the military movement to free Germany from the French under Napoleon. He was wounded at the Battle of Bautzen, but soon recovered, and shortly after was killed in the engagement at

Rosenberg. It was during the excitement of his military life that he wrote a number of patriotic songs, which, accompanied by the music of Weber, became celebrated. These include "The Sword Song." He is the author of "Zriny," an historical drama, "Buds," a volume of poems, and "Rosamunde," a dramatization of the love story of Rosamunde and Henry of England.

KOROLENKO (kō-rô-lĕn′kō), **Valdimir Galaktionovitch,** author, born in Zhitomir, Russia, July 15, 1853; died at Poltava, Dec. 25, 1921. He received an education in the public schools, and afterward attended educational institutions in Saint Petersburg and Moscow. In 1874 he was expelled from the Forestry Institute, Moscow, owing to political trouble, and was shortly after exiled to Kronstadt and finally sent for six years to Siberia. He was allowed to return to Russia in 1885, when he settled at Nizhni-Novgorod, and his time was devoted chiefly to literature. He is one of the popular Russian writers of recent times. Selections from his complete works published in two volumes have been translated and read extensively in the English, German, and French. Among his best known writings are "Makar's Dream," "The Blind Musician," "Forest Whispers," "In Bad Society," "Prokhor and the Students," "Russian Thought," and "Memoirs of a Siberian Tourist."

KOSCIUSKO (kŏs-sĭ-ŭs′kô), **Mount,** one of the most elevated mountain peaks of Australia, situated in the Australian Alps, in New South Wales. It has a height of 7,308 feet above sea level.

KOSCIUSKO, Thaddeus, Polish general and patriot, born in the province of Minsk, western Russia, Feb. 12, 1746; died Oct. 15, 1817. He descended from a wealthy family of Lithuania, was educated at the military school at Warsaw, and later completed his education in France. After returning to Poland, he became tutor to the daughter of Sosnowski, marshal of Lithuania. In 1776 he came to America and rendered valuable aid to the colonists in the Revolutionary War, rising in rank to brigadier general. His services were especially valuable at Bemis Heights, New Saratoga, and in planning the fortifications at West Point.

THADDEUS KOSCIUSKO.

He returned to Europe in 1786. In 1794 he was appointed general of the insurgent army of Poland in the war against Russia, having previously served with distinction at Dubienka. As commander in chief and dictator he led the insurgent forces against the Russian troops at Raclawice, near Cracow, and there obtained a brilliant victory. Subsequently the Poles in Warsaw joined the insurrection, after which he organized a provisional government and effectually resisted the United Prussian and Russian army for several months. His army consisted of 20,000 regular troops and 40,000 peasants, the whole being about one-third that of the allied army, but with these he was able to hold Warsaw, and even compelled the enemy to raise the siege laid to that city. At last he was overpowered by superior forces in the Battle of Maciejowice, on Oct. 10, 1794, and, after being wounded, was taken prisoner. The Russians confined him at Saint Petersburg until after the death of the Empress Catharine, but he was restored to liberty on the accession of Paul I., in 1796.

At the time of liberation Kosciusko was offered an estate with 1,500 peasants, which he accepted for a brief period, but later resigned the estate and visited the United States, where he was accorded distinguished honors. Congress granted him a pension and gave him a tract of land. In 1806 Napoleon proposed a plan to restore Poland, but Kosciusko was restrained by a promise to Emperor Paul from taking an active part in the enterprise. However, in 1814 he induced Emperor Alexander to grant amnesty to the Poles in foreign countries. Three years later he released from servitude the peasants on his own estate in Poland. The closing years of his life were spent in France and Switzerland, his death occurring in the latter country at Solothurn from an accident while riding a horse. The remains were taken to Cracow in 1818 at the expense of Emperor Alexander of Russia, where a monument was erected to his honor.

KOSSUTH (kŏsh′o͝ot), **Louis,** Hungarian revolutionist, born at Monok, Hungary, April 27, 1802; died in Turin, Italy, March 20, 1894. He descended from a family of noble rank, studied law at the Protestant college of Sárospatak, and established a successful practice at Pesth. In 1832 he became a member of the diet at Presburg. Soon after he began the publication of a liberal newspaper at Pesth, but it was suppressed by the government. He was arrested for treason in 1837, and was afterward condemned to four years' imprisonment. The liberals in the diet insisted upon his release and refused to vote supplies to the government, causing him to be liberated after eighteen months' confinement. He founded the *Pesti Hirlap* in 1841. This publication met with much political and financial success because of its advanced views in government. In 1847 he was elected a deputy to the diet, where he soon became a prominent leader of the reform forces. Among the demands made by him were that feudal privileges be abolished and the press made free, and, after the French Revolution of 1848, an independent government for Hungary was demanded.

The national assembly of 1849 was induced by the influence of Kossuth to declare that all rights to the throne had been forfeited by the Hapsburg dynasty, and he was given an appointment as provisional governor of Hungary. However, this movement failed for want of European support and because of a defeat at Temesvár, Aug. 9, 1849, when he resigned as dictator in favor of Görgey and soon after fled to Turkey. There he was made a prisoner, but was liberated in 1851 and soon after visited the United States. While in America he spoke before large and enthusiastic audiences in favor of Hungarian independence, and was shown distinct marks of approval in behalf of his cause. He returned to Europe in 1852, making his residence in England until the Italian war of 1859 against Austria began, when his hopes of Hungarian independence were revived anew. However, he was disappointed in the speedy peace concluded at Villafranca. After the war he resided principally at Turin, where he devoted his attention to scientific research, and refused to return to his native land after the amnesty of 1867 was announced, declaring his continuous opposition to the requirement of declaring allegiance by oath. Many of his writings and addresses have been published in various languages besides the Hungarian, among them the French, German, and English.

KOTZEBUE (kō'tsẹ-vụ), **August Friedrich Ferdinand von,** dramatist, born at Weimar, Germany, May 3, 1761; died March 23, 1819. He studied law at Jena and Duisburg, but soon organized an amateur theater at Duisburg. Later he established a law office at Weimar, where he succeeded in building up a lucrative practice, but in a short time entered the civil service of Russia. From 1795 until 1798 he lived on his country seat near Reval, where he devoted much of his time to literary work. He is the author of many dramatic pieces and a few works in history. Among his books are "The Cricket," "The Stranger," "The Bee," "The Most Remarkable Year of My Life," and the "Favorite Coachman of Peter the Great."

KOUMISS (kōō'mĭs), or **Kumys,** a fermented beverage made originally by the Tartars from the milk of mares. It is now made from the milk of cows. Large quantities are manufactured in Europe and the United States. It is valuable for its nutritive and digestive properties, and is prescribed by physicians in cases where other food cannot by retained by the stomach. Mares' milk, which contains a high per cent. of sugar, is used largely for this purpose in Russia and Siberia, but the product made from it and from the milk of goats is characterized by a somewhat unpleasant odor. About forty hours are required for fermentation. The product contains a considerable per cent. of alcohol and carbonic acid.

KOVNO (kôv'nō), a city in Lithuania, capital of the government of Kovno, situated near the junction of the Vilia and Niemen rivers. It is important as a railroad and commercial city. The streets are well paved and cross each other at right angles. It is surrounded by an agricultural country and has a large trade in produce. The manufactures include beet sugar, clothing, earthenware, and machinery. Kovno was founded in the 10th century. It was strongly fortified by the Russians, but the Germans captured it in 1915. Population, 1922, 90,015.

KRAFT (kräft), **Adam,** sculptor, born at Nuremberg, Germany, in 1440; died in 1507. He studied in his native city and became highly proficient as a sculptor and architect. In 1490 he completed a series of works known as "The Seven Stations," now in the German museum. About ten years later he completed his master work, a towering pyramid known as the "Tabernacle," now in the Church of Saint Lawrence. Among his other works are "Tomb of the Schreyer Family," "Scenes in the Passion of Christ," and "Tomb of the Rebeck Family."

KRAKATOA (krä-kȧ-tä'ō), an island in the Strait of Sunda between Java and Sumatra. It is of volcanic origin. The area is six square miles. This island is celebrated on account of numerous earthquakes and volcanic eruptions that are associated with it. It was the scene of vast disturbances in 1883, when the explosions were perceptible a distance of 150 miles. Though the island is uninhabited, about 35,000 people were killed on the islands in the vicinity by great sea waves that swept away several villages and a number of towns. Prior to the disturbances the island was twice its present size.

KRAKOW. See **Cracow.**

KREFELD (krā'fĕlt), or **Crefeld,** a city of Germany, in Rhenish Prussia, about thirty miles northwest of Cologne. It is located four miles west of the Rhine, at the junction of several railroads, and has extensive electric railway facilities. The streets are regularly platted and substantially paved and lighted by gas and electricity. It is celebrated as a center for the manufacture of silk and velvet, in which enterprise it has few rivals in Europe. Other manufactures include soap, hosiery, chemicals, sugar, leather, paper, and machinery. It is the seat of an academy, a gymnasium, a conservatory of music, and many fine schools and churches. Krefeld dates from the 12th century. It has been a part of Prussia since 1702. Population, 1905, 110,344; in 1920, 129.412.

KREMENTCHUG (krĕm-ĕn-chŏŏk'), a city in the government of Poltava, Russia, on the Dnieper River, 68 miles southwest of the city of Poltava. It has extensive railroad connections and a large trade in tallow, salt, and timber. The manufactures include machinery, beet sugar, furniture, and fabrics. A large tubular railway bridge crosses the Dnieper. The municipal facilities are modern, including electric railways, sewerage, and waterworks. Population, 1922, 64,073.

KREMLIN (krĕm′lĭn), the name applied in Russia to a citadel. The most celebrated of these structures is the Kremlin at Moscow, which is situated on the north bank of the Moskva River. It is surrounded with walls from 12 to 16 feet thick and from 28 to 50 feet high. These walls are supplied with battlements, embrasures, five gates, and numerous towers, and they inclose a space about one and a half miles in circumference. Within the Kremlin are many churches, cathedrals, monasteries, and fine public buildings. As a whole it presents a peculiar and imposing aspect. Many of the inhabitants remove their hats when passing by the gate known as that of the Redeemer, and no one passes it without bowing and crossing himself. Among the curiosities of this remarkable place are an ancient monster cannon and the broken Tsar Kolokol, a bell weighing 200 tons, cast for the Empress Anna in 1733. Napoleon I. resided in the Kremlin for a short time in 1812.

KRISHNA (krĭsh′nȧ), in Hindu mythology, the eighth incarnation of the Brahmanic god Vishnu, and the most popular deity in the Pantheon of the Hindus. He is the hero of the greatest Sanskrit poem. His life history is similar to that of Hercules and Apollo.

KRONSTADT (krōn′stȧt), a free town of Rumania, in Transylvania, at the foot of the Transylvanian Alps. It is conveniently connected by railways and is noted for its manufacturing and commercial trade. The municipal facilities include electric street railways, waterworks, and public parks. Among the noteworthy buildings are the townhall and the Church of Saint Bartholomew. It is surrounded by a mountainous country, which is well wooded and rich in minerals. The inhabitants are mostly Germans. Population, 1922, 33,807.

KRONSTADT, a seaport of Russia, on the island of Koblan, twenty miles west of Saint Petersburg. It is strongly fortified and serves as a strategic military protection to the national capital. The city is thought to be almost impregnable, being defended by strong granite forts and armed with heavy guns. Peter the Great founded it in 1710, but it has since been improved greatly. It has regularly platted streets, many Greek Catholic churches, a thoroughly organized school system, and modern municipal facilities. The harbor is safe and large. It has manufactures of ships, cannon, clothing, machinery, and various implements of war. Population, 1922, 68,206.

KROPOTKIN (krȧ-pôt′kĕn), or **Krapotkin, Peter Alexeyevitch,** geographer, born at Moscow, Russia, in 1842; died Feb. 8, 1921. He studied at the College of Pages, and soon after entered a Cossack regiment. Later he studied geography and went to Siberia and China to conduct scientific expeditions. In 1871 he became interested in the Commune of Paris and soon after joined the revolutionists. His chief publications include "In Russian and French Prisons," "Law and Authority," and "Memoirs of a Revolutionist."

KREISLER (krīs′lẽr), **Friedrich,** violinist, born in Vienna, Austria, Feb. 2, 1875. He became interested in music when a mere child. His debut as a professional musician was made at Berlin in 1899, and subsequently he made numerous tours which brought him into the leading cities of Europe and America. He published a volume entitled "Four Weeks in the Trenches," the war story of a violinist.

KRUGER (krü′gẽr), **Stephen John Paul,** president of the Transvaal Republic, born in Rastenburg, Cape Colony, Oct. 10, 1825; died at The Hague, July 14, 1904. He accompanied the Boers into Natal and later into the Orange country, and when fourteen years of age crossed the Vaal River. His early life was devoted to the development of the country, for which purpose he often aided in its defense. In 1872 he was elected a member of the executive committee of the South African Republic and later became a general in the army. On February 27, 1881, he fought against the British and aided in their defeat at Majuba Hill, being commander in chief. He was first elected president of the republic in 1883, and, on account of distinguished ability, was reëlected in 1888, in 1893, and in 1898. Both in statesmanship and diplomacy he exhibited recognized ability. He attained a world-wide reputation for strong individuality, remarkable resources, and devotion to liberty in government. Being foremost as a defender of independence, he led the Boers in a characteristic defense against the British in the Anglo-Boer War of 1899-1901, in which the forces of the Transvaal Republic and the Orange Free State were allied. Being pressed by the British advances, he left Pretoria and on Oct. 19, 1900, sailed for Europe, where he was received with marked enthusiasm by the people, especially in France. He resided in The Hague the remainder of his life.

KRUPP (kro͝op), **Alfred,** noted gun manufacturer, born in Essen, Germany, April 26, 1812; died July 14, 1887. His father, Friedrich Krupp, discovered the art of making cast steel, and when Alfred was fourteen years of age his father died. A small forge and shop were left for the support of his family. At the time Alfred took charge of it, in 1848, he employed two workmen. Soon after he discovered a method of casting steel in large masses and erected the first forging hammer employed in Germany. The manufactory, having been greatly enlarged, soon became one of the most important in Europe and produced engines, rails, car wheels, tires, and steel guns. The guns manufactured there were used in the Franco-

Prussian War, giving the German army a decided advantage, especially at the siege of Paris. By 1875 the principal powers of Europe and of other grand divisions began to adopt the Krupp steel guns, and at present they are used more extensively than any others. In 1890 the factory cast a gun for the Russian government weighing 135 tons, and in 1893 exhibited one at the Chicago Columbian Exposition weighing 124 tons.

ALFRED KRUPP, SR.

Besides the extensive gun manufactory, Krupp acquired large mines and collieries, and at present 22,000 workmen are employed. The manufactory covers an area of over 1,000 acres. The coal mines are in Essen and Bochum, while iron mines belonging to the institution are situated in Germany and Spain. The entire concern is by far the greatest of its kind in the world, and is only entered by workmen, all others and representatives of foreign governments being denied permission to inspect the premises. Alfred Krupp (1854-1902), son of the founder, succeeded to the general management after the death of his father. In 1864 letters of nobility were tendered Krupp by the King of Prussia, which he declined. He was one of the wealthiest men of Germany. At his death 60,000 people gathered at Essen to pay their last respects.

KRYPTON, a gaseous element which resembles argon, discovered in the air by William Ramsay in 1898. Owing to the rarity of this element, it is not well known. Ramsay estimated that only one part in a million of the atmosphere consists of krypton. The atomic weight is 58.74.

KUBAN (kōō-bän′y′), a river of the Caucasus, in Russia. It rises in the Caucasus Mountains, near Mount Elbruz, and discharges partly into the Black Sea and partly into the Sea of Azov. It passes through a fertile region, but in its lower course are many marshes. The total length is 525 miles.

KUBELIK (ku̦′be̦-lêk), **Jan,** violinist, born near Prague, Bohemia, in 1880. He studied at the Conservatory of Prague and in 1898 began to give public recitals. Two years later he appeared with the Berlin Philharmonic Society, a noted musical organization, and played successfully in the leading cities of Europe. He made several tours of America and by his remarkable technique excited much favorable comment. He received many important appointments, including that of violinist of the Royal Court of Rumania.

KUBLAI-KHAN (kōō′blī-kän′), Mongol Emperor of China, founder of the twentieth dynasty, that of the Mongols of Yuen, born in Tartary in the early part of the 13th century; died at Pekin in 1294. He was the reigning sovereign of Tartary in 1250 and formed an alliance with Li-Sung, Emperor of China, for the purpose of expelling the Oriental Tartars from the latter country. After the incursionists were subdued and expelled his army remained in China, and he became emperor of that country after the death of Li-Sung, about 1260. Marco Polo, a celebrated European traveler, lived at the court of this prince.

KU-KLUX KLAN (kū-klŭx′), a society founded at Pulaski, Tenn., in 1866, in the reconstruction period that followed the Civil War. At first the purposes of the society were for amusement, but later it took on the object of opposing the reconstruction acts and preventing freedmen from voting. In some cases the Negroes were persecuted, prevented from voting, and acts of violence were perpetrated upon them. The organization in the period of its greatest strength numbered about 550,000 members, all of whom were people of the Southern States, but its largest membership was in Mississippi, South Carolina, Georgia, Tennessee, Alabama, and Kentucky. An act of Congress passed April 20, 1871, provided suppressive measures and the society disbanded.

This organization was revived in 1915, when William J. Simmons and three survivors of the original Ku-Klux Klan incorporated a new organization as a fraternal order and received a charter from the State of Georgia. It soon became national in its character. Much secrecy is maintained, and members are known only by each other. The avowed principles include opposition to public graft, strikes and lynching; support of the supremacy of the white race and of Americans and Protestants as against the colored races, Catholics and Jews; and a demand for the sovereignty of State rights under the Constitution. Much opposition arose against the order in 1923, owing to its secret dealings and the wearing of masks, while in some states the klansmen won support and carried many elections.

KÚMAMÓTO (kōō′mȧ-mô-tō′), a commercial city of Japan, near the western shore of the island of Kiushiu, on the Shira River. It is the capital of the Kúmamóto district and is strongly fortified. It is an educational center and is reached by steamers. Population, 1922, 60,346.

KUMÁSSI (kōō-mȧs′sĭ), or **Coomassie,** a town of Western Africa, in the British Gold Coast, capital of the native kingdom of Ashanti. It is located about 150 miles north of the Gulf of Guinea and has railroad connections with Sekondi, on the Gulf of Guinea. The streets are regularly platted and somewhat improved.

An exchange and market place are in the central part. The town has considerable trade in cereals, live stock, and fruit. Population, 1916, 30,680.

KURDISTAN. See **Koordistan.**

KUROKI, Itei, soldier, born at Kogoshima, Japan, in 1844. He took up a military life at an early age and commanded a detachment in 1868. Three years later he was promoted to be a captain in the regular army, was made a lieutenant general in 1892, and mobilized the army of Japan at the beginning of the war with China. He was made a general in 1903 and commanded the first army in the war against Russia, winning the Battle of the Yalu and other engagements. In 1907 he visited the United States, where he was received with much respect and admiration. He died Feb. 4, 1923.

ALEXEI KUROPATKIN.

KUROPATKIN (kụ-rō̇-pät′kẽn), **Alexei Nikolayevitch,** general, born in 1848. He entered the army of Russia in 1864 and, after serving a brief period in his native country, was transferred to Turkestan, where he became distinguished as an efficient soldier. In 1874 he was sent to Algeria and two years later returned to defend Russian interests against the Turks in Turkestan and Samarkand. In the Russo-Turkish War of 1877-78 he served in the regular army, and subsequently conducted a campaign against the Tekke-Turkomans. He became lieutenant general in 1890, was made minister of war in 1898, and was promoted to adjutant general in 1902. During the Russo-Japanese War he had general command of the army in Manchuria. In a series of engagements lasting from Feb. 20 to March 15, 1905, known as the Battle of Mukden, he was defeated with a loss of about 100,000 men and officers. Soon after he was recalled to Russia and was succeeded by General Linevitch. He died Jan. 23, 1925.

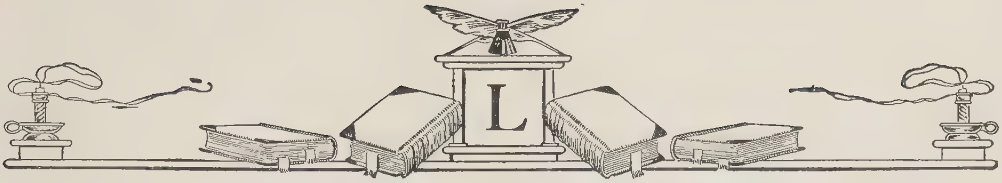
KURO SIVO, Kuro Siwo, or **Japan Current,** a warm equatorial current formed in the region southeast of Asia. It flows past Formosa, Japan, and the Aleutian Islands, after which it passes southward to California. Though important in commerce and in the modification of climate, it is inferior to the Gulf Stream.

KUSKOKWIM (kŭs′kō̇-kwĭm), a river of Alaska, the second in size of that territory. It rises on the north side of the Alaskan mountains, has a general direction toward the southwest, and after a course of 500 miles flows into Kuskokwim Bay, an inlet from Bering Sea. The channel is irregular and passes between precipitous rocks in much of the course. About 300 miles are navigable.

KYANITE (kī′ȧ-nīt), a mineral which is similar to garnet and is used in making inkstands, paperweights, and table tops. It varies in color, but blue predominates. This mineral is found in Bohemia, Switzerland, and various parts of the United States, especially in Virginia and Massachusetts.

KYOTO (kyō′tō̇), or **Kioto,** the third city of Japan, on the island of Hondo, connected with the other trade centers by important railroad lines. The surrounding country is fertile. About six miles from the city is Lake Biwa. The Kamogawa River divides the city into two nearly equal parts. For many years it served as the official residence of the Mikado and was the ecclesiastical capital. At present it is a center of learning, contains many excellent educational and other buildings, and has divers modern facilities. The municipal facilities include electric street railways, electric lights, telephones, and public parks. As a commercial center it ranks among the first of Japan, both in exports and imports. Among the manufactures are silks, clothing, lacquered ware, ivory ornaments, machinery, bronze ornaments, and textiles. Population, 1922, 682,658.

KYRIE ELEISON (kĭr′ĭ-ē ē̇-lī′-sŏn), a form of prayer, meaning "Lord have mercy." It is used in both Greek and Latin liturgies, and occurs in the prayer books and songs of the Anglican and Lutheran churches. In the ordinary mass of the Roman Catholic church it immediately follows the introit and precedes the *Gloria in Excelsis.*



L, a letter of the Indo-European alphabet, the ninth consonant. In the English *l* has only one sound but is sometimes silent, as in *calm* and *half,* and is usually classed as a semivowel or a liquid. It is made by raising the tip of the tongue and passing the sonant breath through openings on both sides with a thrill or rustle. The letter *r* is more closely allied to *l* than any other letter which is associated with the latter, and the two are often interchanged in various languages. It is considered that *l* is a later modification of *r* in the Indo-European alphabet, *r* often changing to *l,* while *d* also takes the place of *l* in some of the languages. As a symbol, in chemistry, it stands for *lithium.*

LAALAND (lạ'lȧn), or **Lolland,** an island in the Baltic Sea, belonging to Denmark. It is 36 miles long, about 12 miles wide, and has an area of 465 square miles. The soil is fertile, producing corn, hops, hemp, and fruit. It has about 50 square miles of oak and beech forests. Maribo is the capital and Nakskov is the largest city. Population, 1922, 71,956.

LABIATAE (lā-bĭ-ā'tē), the botanical name of the plants which belong to the mint family. The order embraces 150 genera and 2,800 species, most of which are native to temperate climates. These plants are widely distributed in the continents, including many that are prized for their flowering and economic properties. Among the best known are the thyme, lavender, marjoram, basil, horehound, sage, rosemary, and peppermint. See **Mint.**

LABLACHE (lȧ-blȧsh'), **Luigi,** operatic singer, born in Naples, Italy, Dec. 6, 1794; died there, Jan. 23, 1858. He appeared as a basso singer at the San Carlo Theater of his native city in 1812, and later attained a reputation by appearing at Palermo, Milan, Rome, Turin, and Vienna. In 1830 he sang successfully at Paris, where he became a favorite, and later sang with equal success at Berlin and Saint Petersburg. While at London he gave instruction in singing to Queen Victoria. His voice was a deep bass and has rarely been equaled, either in quality or volume.

LABOR, the voluntary effort put forth by man to secure some desired object. As associated with land and capital, it constitutes an important factor in the production of wealth. Land, labor, and capital are the three agents of production, but, since labor is the basis of all wealth, it may be regarded the most important factor in economic science. Nature and man are the two great agencies that coöperate in production, nature furnishing the material upon which labor is to be exerted, and man supplying the necessary labor to render the materials of nature available for useful purposes. Labor includes not only muscular exertion, but all the mental effort involved in securing objects of desire. It does not create, but moves and affects changes upon things. By bringing the natural forces to the service of man, and moving materials and objects into positions where forces can act upon them with the desired effect, labor effects its chief productiveness.

The direct changes effected by labor are *transmutation, transformation,* and *transportation;* or, a change of elements, a change of form, and a change of place. These are exemplified by the agriculturist in the production of cereals, fruits, and cheese; by the manufacturer in transforming leather into shoes, cloth into garments, and lumber into houses; and by the transporter, who transfers the production of one community to a locality where it is consumed. Labor is productive or unproductive, depending upon the results that accrue. *Productive labor* is that form which increases wealth or adds to human intelligence, happiness, or morality. *Unproductive labor* includes the misdirected activities, such as are exemplified by failures in speculative projects and by most wars.

In ancient times labor was largely compulsory, such as was applied in the building of the Egyptian pyramids and the wall of China. Through almost the entire history of the world the laboring man has been suppressed more or less in his activities by potentates or men of great wealth, but with the concentration of labor in manufacturing centers powerful efforts began to be exerted for the protection and amelioration of the laborer. The first organizations of this character were formed in the early part of the 18th century, and through all of the last century educational organization tended to render the laboring man more intelligent and efficient. He has come to be an important factor in the government, influencing legislation by the election of such men as are friendly to the interests for which the labor unions stand.

The United Mine Workers and the American Federation of Labor are the strongest industrial organizations of North America, but there are many affiliated branches in the latter, such as the powerful unions supported by builders, railroad workers, and employees of manufactories. Others are associated with the transportation enterprises, such as the Brotherhood of Locomotive Engineers and the National Association of Marine Engineers. Legislation favorable to the interests of labor has been promoted in all the civilized nations of the world. This organization on the part of laborers has been a source of much benefit to the material industries, aiding in production as well as benefiting the laborer intellectually and financially. The most important objects of the labor movement of recent times embrace the compulsory arbitration of differences between employers and employees, the establishment of the eight-hour system of labor, and the improvement of the sanitary conditions of the mines and factories.

LABOR DAY, a legal holiday in many civilized countries. In Canada and the United States it occurs on the first Monday in September, but in most countries of Europe it is observed on May 1. Labor Day was first celebrated in a few states in 1886, but since then it has grown in favor. In many localities it constitutes a holiday of much importance. The celebration usually includes parades on the streets by industrial unions, music, speeches relating to labor interests, various games, and often fireworks in the evening.

LABOR UNIONS. See **Labor; American Federation of Labor; Knights of Labor; Coöperation.**

LABOUCHÈRE (läh-bōō-shâr′), **Henry,** journalist and politician, born in London, England, in 1831. He studied at Eton, entered the diplomatic service in 1854, and was attached to several embassies, including those at Washington, Dresden, Stockholm, Saint Petersburg, and Constantinople. In 1865 he was elected to Parliament for Windsor, was reëlected in 1867, and the following year traveled abroad. During the Franco-German War he was correspondent to the London *Daily News,* and sent reports from Paris during the siege by means of carrier pigeons. In 1877 he founded *Truth,* a society and political newspaper. He was again elected to Parliament in 1880, supporting Gladstone in his Irish policy. In 1896 he was one of the commission to investigate the Jameson Raid and opposed the British policy in the Boer War. He was elected to Parliament from Northampton in 1906. He died Jan. 16, 1912.

LABOULAYE (lȧ-bōō-lå′), **Édouard René Lefebvre de,** jurist and author, born in Paris, France, Jan. 18, 1811; died in Versailles, May 25, 1883. He first became a type founder, when twenty years of age published "History of Landed Property in Europe," and in 1842 was admitted to the bar. Seven years later he was chosen professor of comparative legislation in the College of France. In 1871 he was elected to the national assembly, became a life senator in 1875, and the following year was appointed administrator of the College of France. As a lecturer and writer he opposed the despotism of Napoleon III., and advocated the adoption of a constitution for France similar to that of the United States. His writings embrace "The United States and France," "History of the United States," "Germany and the Slavic States," and "Memoirs of Franklin."

LABRADOR (lăb-rȧ-dôr′), a British possession of North America, situated mainly east and north of Quebec, and forming a dependency of Newfoundland. It extends from the Strait of Belle Isle to Hudson Strait, is bounded on the west by Ungava and the east by the Atlantic, and has an area of about 120,000 square miles. The surface is greatly diversified, portions being desolate and rocky, while in some localities are extensive forests of birch and fir trees. Among the principal streams are the Grand and Northwest rivers, the latter draining Lake Aswanipi, or Hamilton, which is in Quebec. The coast is rocky and is indented by many bays and fjords. Many fish, such as the salmon, cod, and trout, are abundant, and the region is visited annually by over 30,000 fishermen from Canada. The interior contains many valuable fur-bearing animals, among them the otter, marten, fox, bear, wolf, reindeer, and beaver. The winter season is of nine months' duration and very cold, but the summer is moderately warm and adapted to the culture of potatoes and other forms of vegetables. Barley and oats are grown extensively for fodder.

Labrador was visited by the Norsemen in the year 1001, by Cabot in 1498, and by a Portuguese expedition under Cortereal in 1500. In the 11th century it was described by some Norse settlers of Greenland as Helluland, meaning the land of rocks. In 1763 it became a dependency of Newfoundland. The name Labrador was given to the region by the Portuguese, meaning Laborers' Land, and is frequently applied to the entire peninsula between the Saint Lawrence and Hudson Bay. In the latter sense it comprises a large part of Quebec and Ungava. The portion belonging to Newfoundland, in 1921, had a population of 3,621.

LABRADORITE (lăb′rȧ-dôr-īt), a mineral formerly called Labrador hornblende, found on the coast of Labrador. The colors are commonly blue and green. Labradorite is formed chiefly of calcium, aluminum, and sodium silicate. It forms an essential constituent of many rocks, being associated with augite, hornblende, and other mineral substances, and serves a useful purpose for inlaid work and jewelry.

LABUAN (lä-bōō-än′), an island in the East Indies, situated west of the coast of British Borneo, comprising a crown colony of Great Britain. The area is thirty square miles and the surface is mountainous. Coal, timber, sago, honey, and fruits are the chief products. Victoria, the capital, has a population of 1,500. It is the seat of a brisk trade with Singapore and Borneo. The island has been a possession of Great Britain since 1844. It is under the government of the British North Borneo Company. Population, 1922, 8,530.

LABURNUM (là-bûr′nŭm), a small tree native to the Alps of Europe, now planted in gardens and villas as an ornamental shrub. In May and June it presents a beautiful appearance, every twig and small branch being hung with racemes of brilliant yellow flowers. The wood is so hard and heavy that it sinks in water. It takes a high polish, has a greenish color, and is used largely for ornamental work and handles to knives. The seeds are poisonous. Rabbits are so fond of the bark that they damage the tree in the winter.

LABURNUM.

LABYRINTH (lăb′ĭ-rĭnth), a building which contains many tortuous passageways, so constructed that they are difficult to traverse without a guide. Many buildings of this character were maintained anciently, notably in Egypt and Crete. The labyrinth of Crete, according to legendry, contained passages from which no one could escape, hence the visitors became the prey of Minotaur. It was reputed to have been built by King Minos. The only safeguard was a linen thread, which, in being followed, made it possible to reach the exit. This celebrated labyrinth was situated in the district now called Fayoum, near Lake Moeris, contained 3,000 chambers, and is classed as a wonder of the world. Other celebrated labyrinths were at Clusium, Italy, and in Samos and Lemnos. Mazes are imitations of labyrinths and are fashionable in gardens and at expositions. The maze at Hampton Court, in England, is a good example in gardening, while the mystic maze exhibited at the Columbian Exposition, in 1893, was a fine example of a labyrinth with mirrors.

LAC (lăk), a resinous substance obtained from an insect called *coccus lacca,* or lac insect, found in the East Indies, Siam, Burmah, China, and other Asiatic countries. It consists of a granular substance. Among these insects there are about 5,000 females to each of the males, the latter being winged and about twice the size of the females. After the eggs are laid, the mother dies, and when the young come out they secrete the lac. They feed upon the resinous juices of the same tree for several generations, causing the superfluous excretions to form a coat about half an inch thick. This product yields a red fluid for making crimson and scarlet dyes, which are quite similar to the coloring matter of the cochineal. In some portions of India the lac insect is cultivated, both for its lac and dye properties. When in a natural state the product is called *stick-lac;* when crushed and washed, *seed-lac;* and when transformed into a thin crust by melting, *shell-lac.* Lac is used in the manufacture of lacquer, varnish, sealing wax, and materials to stiffen various articles of apparel, such as the calico frame of silk hats. Lac dye produces a beautiful scarlet and is an important article of commerce.

LAC, or **Lak,** a term used in the commerce of the East Indies. It is derived from the Sanskrit word *laksa,* meaning 100,000. One lac is equal to 100,000 rupees and 100 lacs make a *crore.*

LACCADIVES (lăk′kȧ-dīvz), a group of small islands in the Arabian Sea, about 200 miles west of the Malabar coast of British India. They consist of about 20 islands of coral formation and have an area of 745 square miles. The surface is low and flat and much of it is barren and unproductive. The chief products include cocoanuts, plantains, and betel nuts. The inhabitants are Mohammedans of Arabian descent, who engage largely in fishing and seamanship. Population, 1922, 14,500.

LACE, a delicate fabric or network of threads formed of linen, cotton, silk, gold or silver wire, or some other suitable material, forming a fabric of transparent texture. The origin of lace is unknown, but it was used by the ladies of ancient Greece and Rome. In Italy the manufacture of lace was an important industry during the Middle Ages, whence it was introduced into France. A law passed in England in 1483 prohibited its importation, but in the 16th century the manufacture became quite extensive in Western Europe. Brussels, Alençon, and Maltese are among the best known point laces. They have been produced extensively in Belgium and France for many centuries. In the 16th century lace manufactories were established at Honiton, England, and at North Hampton in the 17th century, and in 1768 a machine for manufacturing lace was installed at the latter place.

Many styles of laces are now made, depending upon the mode of manufacture and the purposes for which they are to be used. The finest grades are handmade, these excelling in strength, delicacy, and beauty, and likewise commanding the highest prices. No branch of the textile industry has received more attention than that of lace manufacture, and it is one of the industries in which machine work does not compete in fineness and delicacy with the handmade products. Pillow lace is made largely by hand, but many kinds of fine fabrics of this class are produced wholly by machinery. In lace weaving the threads of the weft are twisted around those of the warp. The character of the net and its name are determined by the manner of twisting, as pattern net, spider net, bobbin net, Paris net, and whip net. Point lace was developed from embroidery, and is made largely by needle and a single thread. Guipure lace is made by the crochet needle. It has a network ground on which patterns are wrought in various stitches in silk. The manufacture of gold and silver lace is associated with the ribbon trade. It has for a basis thin ribbons or flat bands, around which yellow and white threads of cotton are wrapped closely. In the lace industry France takes a very high position, no less than 250,000 persons being engaged in its manufacture in that country. Machine-made imitations of the finer laces are commanding a large sale and taking the place of the more expensive forms.

LACHINE (lȧ-shēn'), a town of Quebec, in Jacques Cartier County, eight miles southwest of Montreal, on Lake Saint Louis. It is on the Canadian National Railway and is popular as a summer residence for citizens of Montreal, with which it is connected by the Lachine Canal. This canal is maintained to avoid the Lachine Rapids on the Saint Lawrence. Extensive electric power works are maintained to supply Montreal. The chief buildings include several fine schools and churches. Lachine was settled and so named about 1669. Population, 1901, 5,561; in 1921, 15,404.

LACHLAN (lŏk'lạn), a river of New South Wales, Australia. It rises in the Blue Mountains and has a length of 700 miles. Near Oxley it joins the Murrumbidgee, belonging to the Murray River system. A large part of the course is through a treeless plain, where it becomes almost dry during the dry season.

LACHRYMAL GLAND (lăk'rĭ-mạl), a small almond-shaped body located in a depression in the upper and outer angle of the eye, between the bone and the eyeball. Its ducts, which secrete the tears, number from six to twelve and open on the inner surface of the upper eyelid, near the outer angle. The liquid is spread over the eye by the upper lid and passes to the inner angle of each eye, where it enters a small opening called the *puncta lachrymalis.* This is the commencement of the tear-canal. The short canals of the upper and lower lids meet in the nasal sack, from which the nasal duct conducts the tears to the lower part of the nose. The diseases which affect the lachrymal organs include an excessive secretion of tears, obstruction to their escape in the nose, and growths that affect the lachrymal glands.

LACKAWANNA (lăk-ȧ-wŏn'nȧ), a river of Pennsylvania, rises in Susquehanna County, and after a course of forty miles joins the Susquehanna near Pittston. The valley and basin of the Lackawanna River are productive coal fields and produce about one-half the anthracite coal obtained in the United States. Scranton, the largest city on its banks, is noted for its large factories and blast furnaces.

LA COLLE, a town of Quebec, in Saint John County, on the Canadian National Railway. It was the scene of an engagement on March 30, 1814, between a British force under Colonel Handcock and an American army under General Wilkinson. The British had a small garrison of 350 men, but they were reinforced during the battle by about 800, and the Americans made the assault with about 5,000. After two hours the Americans withdrew, and the project of clearing the way to Montreal was abandoned. General Wilkinson was relieved from command and tried by court-martial, but was acquitted.

LACONIA (lȧ-kō'nĭ-ȧ), a city and the county seat of Belknap County, New Hampshire, about 25 miles north of Concord, on Lake Winnisquam. It is on the Winnepesaukee River and the Boston and Maine Railroad. The chief buildings include the public library, the hospital, the post office, the court house, and several public schools. It has manufactures of hosiery, machinery, railroad cars, woolen goods, and hardware. Electric lights, waterworks, and bus service are among the facilities. Laconia was settled about 1780 and incorporated in 1852. Population, 1900, 8,042; in 1920, 10,877.

LACQUER (lăk'ẽr), a varnish composed of shellac dissolved in alcohol and colored with various substances, such as saffron, gamboge, and annotto. It serves as a protection from rust and improves the color of metals, especially brass, tin plate, and iron. Lacquer also is applied to wood and papier-maché for the purpose of giving improvement in color. The lacquer ware manufactured by the Japanese and Chinese is varnished by a product made from the juice of a species of sumac, called the varnish tree, which is native to that region of Asia. Vermilion is used in mixing this varnish for the purpose of making a reddish color, and different hues are secured by various other substances. The lacquer made from the sumac not only gives a firm surface, but is able to withstand considerable heat without damage, and it is due to this property that the lacquered vessels from those countries may be used to contain hot drinks and soups. Lacquering among the Japanese is an ancient art and many of their designs are of much value, especially the specimens that were made by them in former centuries. Their silver and gold lacquer ware is among the finest now produced.

LA CROSSE (là-krôs′), a city in Wisconsin, county seat of La Crosse County, at the junction of the La Crosse and Mississippi rivers. It is on the Chicago and Northwestern, the Chicago, Burlington and Quincy, the Chicago, Milwaukee and Saint Paul, and other railroads. The surrounding country is agricultural and has extensive forests of hard-wood timber. Among the noteworthy buildings are the public library, the Federal building, the courthouse, the city hall, and the high school. It has an asylum for the insane, a marine hospital, and two fine parks. The manufactures include woodenware, flour, farming machinery, cigars, buttons, and brooms, clothing, ironware, and lumber. The trade in grain and lumber is extensive. It has systems of waterworks, sewerage, and street pavements. The first settlement was made in 1841 and it was incorporated in 1856. Population, 1920, 30,363.

LACROSSE (là-krŏs′), a game at ball which was originated among the Indians of North America. It is played similarly to football, differing from the latter in that the players endeavor to carry or throw the ball to their opponents' goal on a peculiar bat called *crosse*. The bat consists of a long staff, covered at the end, and has a network which reaches about halfway, becoming narrower as it approaches the hand. In lacrosse, as played at present, the crosse is five or six feet long and the widest part does not exceed one foot. The field is 125 yards long, at each end of which are two goals, which are surrounded by lines called the *crease*, drawn six feet outside the posts. Each of the two sides has twelve players. In 1867 the National Lacrosse Association of Canada was organized and the game has been steadily gaining in popularity. It is now classed among the international games.

LACTEALS (lăk′tē-ạlz), the fine lymphatic tubes that take up substances from the intestines, so named in 1622 from their discoverer, Gasparo Aselli (1580-1626). They commence in the intestines, enter the mesenteric glands, and later unite to form large tubes, which terminate in the thoracic duct. During digestion they can be seen as milky lines across the mesentery. After a full meal, they convey a fluid which is milky in appearance, called *chyle*, and during intervals of fasting convey a yellowish lymph.

LACTIC ACID (lăk′tĭk), a product of the decomposition of sugar in solution, induced by the presence of certain albuminous ferments. It is formed in milk when it turns sour, hence is found in buttermilk. The change of sweet to sour milk is called the *lactic fermentation* and lactic acid is a product of this change Scheele originally discovered this acid in sour milk, whence he named it lactic, but it is also obtained from the juices of many vegetables and from the fluids of the stomach and flesh of animals. The salts formed by this acid with bases are called *lactates*. The only one of importance is the lactate of iron, which is employed extensively as a tonic and a stimulant.

LACTOMETER (lăk-tŏm′ē-tẽr), or **Galactometer,** an instrument to ascertain the comparative specific gravity and value of different samples of milk. It is a special form of the hydrometer, but a variety of these instruments has been originated. The one in common use consists of a glass tube, about twelve inches long, and is graduated into one hundred parts. The instrument is filled with fresh milk, and, after the cream has been fully separated by churning, the value is determined according to the graduated scale, depending upon the space occupied by the cream.

LADD, George Trumbull, educator and author, born in Painesville, Ohio, January 19, 1842. He studied at the Western Reserve College, where he graduated in 1864, and subsequently at the Andover Theological Seminary. In 1869 he became pastor of a Congregational church at Milwaukee, Wis., and two years later was made professor of philosophy at Bowdoin College. For some time he was lecturer on Christian polity and systematic theology at Andover Theological Seminary and in 1831 was called to the chair of philosophy at Yale. He attained to a high position as a lecturer and writer on educational themes, especially on psychology, and traveled and lectured in Japan and India. His chief writings include "Principles of Church Polity," "Essays on the Higher Education," "Philosophy of Mind," "Outlines of Physiological Psychology," "Philosophy of Conduct," and "Lectures to Teachers on Educational Psychology." He died Aug. 8, 1921.

LADOGA (lä′dô-gȧ), an extensive lake of northern Russia, situated northeast of Saint Petersburg. It is the largest inland lake of Europe. The length is 128 miles; breadth, 78 miles; and area, 7,115 square miles. Into it flow the waters from Lakes Ilmen, Onega, and Saima. It contains a number of rocky islands, the most important being Konevetz and Valaam, the two having an area of about 215 square miles. The lake is important on account of its fisheries, navigation facilities, and connection by several canals. Its discharge is by the Neva River into the Gulf of Finland.

LADRONES (là-drōnz′), or **Mariana Islands,** a group of islands situated in the Pacific Ocean, east of the Philippines and north of the Carolines. The group includes sixteen separate islands, of which Rota, Tinian, Saipán, and Guam are the most important. The area of the entire group is 418 square miles. They were discovered by Magellan in 1521 and were in the possession of Spain up to 1898, when Guam was ceded to the United States and the remainder of the Ladrones, together with the Caroline and Pelew groups, were sold to Germany in 1899 for $4,875,000. At the time of their discovery they had a population of 60,000. However, at present the entire population is only about 10,500, of which the principal portion is on the island of Guam. The inhabitants were originally Chamorros, but are now constituted largely of Tagalas. The latter are allied to the Tagals who constitute the chief inhabitants of Luzón. Properly the Ladrone Islands are divided into two groups, the northern of which is actively volcanic, while the southern group contains a greater area of fertile soil, though both have timber and tillable land. Agriculture and commerce are the principal industries, but neither is important. The Japanese occupied the German portion as a result of the Great European War, in 1915.

LADYBIRD, a class of small insects or beetles found commonly on plants and trees. They are noted for their various colors, such as yellow, red, and black and white variegated. The body is spherical and flat at the lower surface, and the legs and head are small. All of the many species are of utility in destroying plant lice. The eggs are laid on the under side of leaves. While both the larvae and the adults feed on plant lice, they also deprive vegetation of some of its juices.

LADYSMITH (lā′dĭ-smĭth), a town of South Africa, in Natal, eighty miles northwest of Pietermaritzburg. It is important as a railway junction, being on lines that enter the Transvaal and Orange River colonies, and has a growing trade in live stock, cereals, and merchandise. The British made it a depot for military stores and supplies prior to the Anglo-Boer War. General White was besieged here from November, 1899, until Feb. 28, 1900, when he was relieved by Lord Dundonald. Population, 1921, 5,595

LADY'S SLIPPER.

LADY'S SLIPPER, a genus of beautiful orchids native to the northern latitudes. Ten species are found in North America. The pink lady's slipper and the showy lady's slipper are well known, the latter being about two feet high. The roots of the yellow lady's slipper yield medicine of value in cases of nervous affection. Most species bear beautiful flowers, which have a lip about two inches long, this being beautifully veined with rose purple.

LA FARGE (lȧ-färzh′), **John,** artist, born in New York City, March 31, 1835. He studied art in New York and Paris. At first he devoted his attention to drafting on wood and later to the painting of landscapes, portraits, and flowers. In 1869 he was elected a member of the National Academy, and in 1889 received a first-class medal at the Paris Exposition for excellent specimens of stained glass. Soon after he was made a knight of the Legion of Honor. His finest productions include "Saint Paul at Athens," "View Over Newport," and "New England Pasture Land." He executed decorative paintings in Saint Thomas' Church and the Church of the Ascension, New York; Trinity Church, Boston; and the battle window in Memorial Hall, Harvard. He died Nov. 14, 1910.

LAFAYETTE (lä-fȧ-ĕt′), a city in Indiana, county seat of Tippecanoe County, on the Wabash River, sixty miles northwest of Indianapolis. It is on the Wabash, the Cleveland, Cincinnati, Chicago and Saint Louis, and other railroads. The surrounding country is agricultural and dairying. Among the chief buildings are the county courthouse, the public library, the high school, the Saint Elizabeth Hospital, and Purdue University. It has well-paved streets, electric street railways, gas and electric lights, and systems of sewerage and waterworks. The manufactures embrace carpets, safes, knit goods, flour, electric meters, safes, machinery, and cooper products. Lafayette has an important jobbing trade and is a grain and live-stock market. It is located on the site of an old fort which was built by the French in 1720 and surrendered to the British in 1760. The first permanent settlement was made in 1820, when it was named in honor of General Lafayette, and was incorporated in 1854. Population, 1920, 22,486.

MARQUIS DE LAFAYETTE.

LAFAYETTE (lȧ-fȧ-yĕt′), **Marie Jean Paul Roch Yves Gilbert Motier, Marquis de,** general and statesman, born in Auvergne, France, Sept. 6, 1757; died in Paris, May 20, 1834. He was a page to the queen of Louis XV. when a boy. At the early age of sixteen he married and in the same year entered the army. When the American Revolution excited the sympathy of many high-spirited Frenchmen, he was one of the most friendly to American independence. In April, 1777, he sailed from Bordeaux

ROBERT MARION LA FOLLETTE,

One of the leaders in the United States Senate and Progressive candidate for President in 1924; died June 18, 1925.

(Opp. 1531)

in a vessel equipped at his own expense to aid the Americans, with the nominal disapproval of France. He landed in South Carolina and thence proceeded northward, receiving an appointment as major general in July, and became an intimate friend of Washington. At the Battle of Brandywine he was wounded, but served at Monmouth and in the Rhode Island campaign, and returned to France in 1779 because of the war with England. However, before the close of the year he returned to America, and was a member of the board of judges in the trial of Major André. In 1781 he commanded in Virginia against Arnold and Cornwallis, and returned to France after the close of the war, but made a brief visit to America in 1784, when he was received by the American people with marks of great distinction.

When the Revolution began in France, Lafayette became a prominent factor, and in 1789 introduced in the assembly the celebrated Declaration of Rights, a document modeled after the Declaration of Independence. Soon after he was appointed commander in chief of the national guards, and in that capacity made heroic struggles in favor of order and humane conduct. His efforts saved the king and queen from mob violence, which was threatened at the palace of Versailles. In 1790, when the constitution was adopted, Lafayette resigned his command in the army and retired to his estates at La Grange. He and two others were appointed major generals in 1792, but, after conducting operations on the frontier of Flanders, he was removed by the Jacobins. Escaping to Liége, Belgium, he was taken prisoner by the Prussians and Austrians and remained principally at Olmütz, but was liberated by the efforts of Napoleon in 1797. He became a member of the chamber of deputies, in 1818, where he advocated liberal legislation. In 1824 he made a visit to America at the invitation of Congress and was given a triumphant reception. Congress voted him a township of land and a cash fund of $200,000. In the Revolution of 1830 he was appointed general of the national guards, and in that capacity aided in securing the throne to Louis Philippe.

LAFAYETTE COLLEGE, an educational institution at Easton, Pa. It was chartered in 1826 and formally opened in 1832. In 1850 it passed under the control of the Presbyterian church. The departments include those of science, chemistry, language, philosophy, art, and engineering. It has a library of 65,000 volumes and property valued at $2,600,000. The attendance averages 1,080 students.

LA FOLLETTE (lȧ fŏl-lĕt′), **Robert Marion,** public man, born in Primrose, Wis., June 14, 1855. He attended the public schools and in 1879 graduated at the University of Wisconsin. The following year he was admitted to the bar at Madison and was soon after elected to the office of district attorney of Dane County, in which position he served successfully until 1884. Subsequently he practiced law, was elected to Congress in 1887, and on retiring from Congress, in 1891, he again resumed the practice of law at Madison. In the meantime he continued active in politics and became the leader of the younger element in his party, known as Half-breeds, and was opposed to the so-called Stalwarts. In 1900 he was elected Governor of Wisconsin and was reëlected in 1902 and in 1904. As Governor he was an advocate of a primary election law and reform of taxes on corporations. In 1904, 1910, 1916 and 1922 he was elected U. S. Senator. He was the candidate for President on the Progressive ticket in 1924, receiving 13 electoral and 4,823,606 of the popular votes. He died June 18, 1925.

ROBERT M. LA FOLLETTE.

LA FONTAINE (lä fŏn-tān′), **Jean de,** author and poet, born in Champagne, France, July 8, 1621; died in Paris, April 13, 1695. He studied in the grammar school of his native town and at the seminary of Saint Magloire. The Duchess de Bouillon invited him to Paris, where he became interested in writing verse and translating from early authors. He published a translation of the "Eunuchus" of Terence in 1654, and in 1659 received a pension of 1,000 francs from Fouquet on account of the poem "Adonis." Subsequently he formed a close friendship with Boileau, Molière, and Racine, and was made a member of the French Academy. In character La Fontaine was frivolous and reckless, yet he possessed many personal charms and a strong intellect, and his writings are marked by distinct originality and deep study. Inspiration for his productions was drawn from Ariosto, Boccaccio, Rabelais, and other famous writers. Many of his writings have gone through numerous editions.

LAGOON (lȧ-gōōn′), a shallow lake connected with the sea or a river. Lagoons are of frequent occurrence, especially in Italy, Holland, and South America. In the summer time they frequently dry up or become stagnant pools. The term is applied to small ponds in some sections of the country, though chiefly in the western part of the United States.

LAGOS (lä′gōs), a city of Mexico, in the state of Jalisco, connected with the capital by the Mexican Central Railroad. The surrounding country contains extensive deposits of iron ore and opal. It has a large jobbing trade and extensive interests in smelting. In 1817 it was the scene of a battle between the Mexicans and Spaniards. Population, 1922, 14,048.

LAGOS, a British possession on the western coast of Africa, about 150 miles east of the Gold

Coast and near the Bay of Benin. The colony has an area of 3,460 square miles, but to it is attached a protectorate of 28,350 square miles. Lagos, the chief town, is situated on an island of the same name, which has an area of about four square miles. It has exports of cotton, gum, palm kernels, and copal, and imports of tobacco, hardware, cotton goods, and machinery. The district was acquired by Great Britain in 1861, when it was governed from the Gold Coast, but an independent government was established for it in 1886. In 1901 it was made a colony. Population, 1922, 2,500,000.

LAGRANGE (lȧ-gränzh′), **Joseph Louis,** mathematician, born in Turin, Italy, Jan. 25, 1736; died in Paris, France, April 10, 1813. He was of French extraction, studied at the College of Turin and at Berlin, and in 1754 was made professor of mathematics in the Artillery School of Turin. Frederick the Great of Germany appointed him director of the Academy at Berlin, in 1759, where he continued his work in higher mathematics, and applied that branch to the sciences of astronomy and physics. In 1762 he published his "Calculus of Variations," a work upon which his reputation is based. He secured a prize at the French Academy in 1764 for his memoir entitled "Libration of the Moon," in which he outlined and applied several principles in astronomy that were not well understood for his time. Napoleon bestowed upon him the cross of the Legion of Honor, made him count, and appointed him a member of the senate. His writings not named above include "Memoirs on the Motion of Fluids," "Provocation of Sound," "Analytical Mechanics," and "New Method."

LA GUAYRA (lȧ gwī′rȧ), a city of Venezuela, the principal seaport of that country, five miles from Caracas. It is situated on a narrow strip of land along the coast and is important for its harbor and railway connections. Among the structures of interest are two hospitals, a cathedral, and a statue of Vargas, a physician and native of La Guayra. The trade consists chiefly in coffee, hides, cocoa, and live stock. It was founded in 1588 and was blockaded by an English and German fleet in 1903, pending the adjustment of some claims against the government of Venezuela. Population, 1922, 9,125.

LAHORE (lä-hōr′), a city of India, capital of the Punjab, on the Ravi River. It is connected by important railroads with many other trade emporiums. The older part of the city includes 640 acres and is surrounded by brick walls sixteen feet high. The walls are pierced by thirteen gates. Outside of these walls are the newer parts of the city. The streets in the older part are tortuous, narrow, and poorly graded. It has few modern improvements. Among the principal buildings are the fort, which occupies a prominent position, and the Punjab University, one of the most noted educational institutions of India. Other institutions are the Law School, Oriental College, Mayo Hospital, Medical School, and Roberts Institute. The Mongol Empire had its seat of government at Lahore, beginning with 1524, and during that period the city attained its greatest prosperity. It became the capital of the Sikhs in 1799, and in 1849 was made the capital of the Punjab. The inhabitants consist largely of Mohammedans, who maintain many fine mosques and several seminaries. It has an extensive trade in live stock, cereals, and manufactures. Population, 1922, 225,694.

LAING (lāng), **Alexander Gordon,** traveler, born in Edinburgh, Scotland, Dec. 27, 1793; died in September, 1826. He was educated for the profession of a school teacher, but joined the army. In 1820 he went to Sierra Leona, where he was an aid-de-camp to the Governor. He returned to England in 1824, when he was promoted to the rank of major and placed at the head of an African exploring expedition. The following year he explored the upper course of the Nile, but was strangled by an Arab sheik near Timbuktu, on refusing to embrace the Islam faith.

LAKE, a sheet or body of water wholly surrounded by land, differing from a pond or lagoon in being deeper and larger. Lakes are very numerous in large bodies of land where rainfall is considerable, as in the equatorial region of Africa, the northern part of the United States, and the central part of Canada. The greater number of lakes receive and discharge streams of water, hence the water retained within their depressions is fresh. In many warm and dry regions the lakes have no visible outlet, hence the water is saline or salty, such as the Caspian Sea and the Great Salt Lake. Some lakes are fed almost entirely by springs. This class receive no inflow from streams and the outflow, though constant in most cases, is not materially large. Some small lakes receive no inflow and have no outlet, the rainfall within the basin being practically equal to the evaporation. Lakes are important in that they supply a water surface for evaporation, thus affecting the rainfall. Some are highly valuable in their fisheries and as avenues for transportation.

LAKE CHARLES, a city in Louisiana, capital of Calcasieu Parish, on the Calcasieu River. It is on the Kansas City Southern, the Southern Pacific, and other railroads, and is surrounded by a fertile cereal and fruit-growing region. The city has a fine site on Lake Charles and is popular as a winter residence for people from the North. Among the noteworthy buildings are the Carnegie library, the county courthouse, the high school, and St. Charles Academy. It has manufactures of sugar, cigars, railroad cars, lumber products, and machinery. The city has electric lights, waterworks, and finely paved streets. It was settled in 1850 and incorporated in 1860. Population, 1900, 6,680; in 1920, 13,088.

LAKE CITY, a town of Florida, county seat of Columbia County, sixty miles west of Jacksonville. It is on the Seaboard Air Line, the Atlantic Coast Line, and other railroads, and is surrounded by a cotton-growing district. The manufactures include turpentine, cigars, phosphates, and lumber products. It is the seat of the Veteran's Bureau Hospital No. 63, has electric lighting, and contains several fine school and church buildings. In 1901 it received a new charter as a city. Population, 1905, 6,509; in 1925, 4,279.

LAKE DISTRICT, a region of England, embracing a portion of Cumberland, Westmoreland, and Lancaster counties, in which sixteen small lakes are situated. The region is a favorite resort for tourists, and has suggested many poetical gems to different writers of eminence. Coleridge, Southey, and Wordsworth, besides many others, took up their residence in the Lake Region, and became known as the "Lake School Poets," as suggested by the Edinburgh *Review*.

LAKE DWELLINGS, the habitations built by ancient peoples on small artificial islands in lakes, or on piles in the shallow margins of lakes. These dwellings were mentioned by Herodotus, who described a Thracian tribe living in the year 520 B. C., in a small mountain lake of what now is included in Rumelia. The custom of constructing buildings of this character prevailed in Europe through many centuries. Among the best evidences of such structures are those found in Switzerland in 1854, which form the theme of a historic work by Dr. Keller, of Zurich, entitled "Lake Dwellings of Switzerland and Other Parts of Europe." Remains of this kind have been found in many lakes of Switzerland, but particularly in Lake Zurich.

The lake dwellings belong most commonly to the iron age, many of the shields, bridle bits, and implements found being made of iron. The dwellings described by Herodotus were approached by a narrow bridge and in the floor of each dwelling was a trapdoor whereby fishing from the domicile was facilitated. It is asserted that the fish were lured by feeding. Many of the remains throw light on prehistoric men and give evidence that pile buildings were used extensively for many centuries. It is noteworthy that lake dwellings still exist among barbarous tribes, being found in portions of the Caroline Islands, the Malay Archipelago, and New Zealand. In Lake Maracaybo, Venezuela, and in various parts of Russia lake dwellings are occupied by semicivilized people. Others occur in Central Africa, where they are occupied for convenience in fishing and as a means of defense against wild animals and savages.

LAKELAND, a city of Florida, in Polk County, on two trunk lines of the Atlantic Coast Line Railroad. It is in a fertile fruit growing country. The features include the high schools, many prosperous industries, and communication by several motor bus lines. The climate is pleasant and healthful. It is one of the most rapidly growing cities of the State. Population, 1925, 17,051.

LAKE MALAR (mä'lär), or **Maelar,** the largest lake of Sweden, situated immediately west of Stockholm. It is seventy miles long and from two to twenty miles wide. The surface is nearly level with the Baltic Sea, into which it discharges by several channels. It is noted for its navigation facilities and fisheries. Many castles adorn its shores. It contains about 1,200 islands, most of which are wooded.

LAKE OF THE THOUSAND ISLANDS, the name applied to an expansion of the Saint Lawrence River, extending from Lake Ontario about forty miles down the river. It contains about 1,750 islands. Wolf Island is the largest, being about twenty miles long and seven miles wide.

LAKE OF THE WOODS, a lake of North America, bounded by Minnesota, Manitoba, and Ontario, 190 miles northwest of Lake Superior. It contains a number of wooded islands, is about 65 miles long, and receives the water of Rainy River. The outlet is through the Winnipeg River, by which it is connected with Lake Winnipeg.

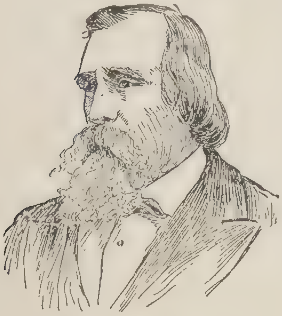
LAKES, The Great, five great fresh-water bodies of North America. They include lakes Superior, Huron, Michigan, Erie, and Ontario, of which the first named is the largest fresh-water lake in the world. The five lakes are connected with each other, the overflow being discharged naturally by the Saint Lawrence River into the Gulf of Saint Lawrence. However, a portion of the outflow is now carried to the Mississippi through the Chicago Drainage Canal. Lake Michigan is wholly within the United States, and the other four form a portion of the natural boundary between that country and Canada. These lakes are of vast importance in the commerce of the two countries and are valuable for their fisheries. Chicago, the largest inland city of the world, is at the head of Lake Michigan. Other large cities on their shores include Buffalo, Cleveland, Detroit, Duluth, Milwaukee, Toledo, and Toronto. Following is a comparative table relative to size and elevation:

NAME.	AREA, SQUARE MILES.	ELEVATION ABOVE SEA LEVEL
Ontario	7,240	247
Erie	9,600	573
Michigan	22,450	581
Huron	21,000	578
Superior	31,200	602

LAKEWOOD, a suburb of Cleveland, Ohio, 4 miles west of the public square, on Lake Erie, on the Nickel Plate and other railroads. It has electric railways, high school, city hall, and a brisk trade. The industries include automobile works. Population, 1926, 65,000.

LAMAISM (lä'mȧ-ĭz'm), the prevailing religion of Tibet and Mongolia, constituting a branch of Buddhism. Lamaism is party political, especially in Tibet. Though the political authority is confined to Tibet itself, the chief official of the church, known as the *Dalai Lama,* is the acknowledged head of Lamaism. Adherents to this faith are quite numerous in Japan, China, and various parts of India. See **Buddhism.**

LAMAR (là-mär′), **Lucius Quintus Cincinnatus,** statesman, born in Putnam County, Georgia, Sept. 1, 1826; died at Macon, Jan. 23, 1893. He studied at Emory College, was admitted to the Georgia bar in 1847, and two years later became professor of mathematics in the University of Mississippi. In 1853 he was elected as a representative to the State Legislature of Georgia, having removed to Covington in 1852, and in 1856 became a member of Congress from Mississippi, where he had settled in 1855. At the beginning of the Civil War he resigned and entered the Confederate army and later was sent as a special commissioner to Europe, where he solicited financial aid and government recognition. He returned to America early in 1864 and served for some time in the Third Army Corps. When the war closed, he had attained the rank of colonel, and in 1866 was elected professor of political economy in the University of Mississippi, where he taught until 1872, when he was again elected to Congress. He was reëlected in 1874 and became United States Senator in 1877, serving until 1885, when he became Secretary of the Interior under President Cleveland. In 1887 he was appointed associate justice of the United States Supreme Court, serving in that position until his death.

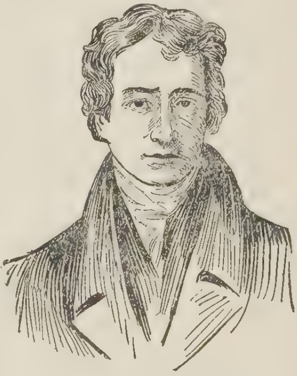


LUCIUS Q. C. LAMAR.

LAMARCK (là-märk′), **Jean Baptiste Pierre Antoine de Monet, Chevalier de,** naturalist and evolutionist, born in Picardy, France, Aug. 1, 1744; died Dec. 18, 1829. He studied medicine at Paris, joined the French army in the Seven Years' War, but, on account of an injury, resigned and resumed the study of medicine at Paris. While there he became interested in physical sciences, botany, and zoölogy, and for the purpose of supporting himself worked in a banker's office. In 1788 he was elected botanist at the Jardin du Roi, and in 1793 became professor of zoölogy at the Museum of Natural History. After long years of careful study, he announced his belief in the doctrine of spontaneous generation, and held views in relation to the origin of species similar to those of Darwin. The most important of his publications is "Philosophy of Zoölogy," a work that went through many editions and translations. Other publications from his pen are "Jardin des Plantes," "Flore Française," "Histoire des Animaux Sans Vertebres" and "Dictionary of Botany."

LAMARTINE (là-mär-tēn′), **Alphonse Marie Louis de,** statesman and author, born in Mâcon, France, Oct. 21, 1790; died Feb. 28, 1869. He descended from a good family, studied at Lyons and Belley, and showed particular interest in poetical literature and travel. In 1811 he made a tour of Italy, where he resided much of the time after 1815. He published his "Poetical Meditations" in 1820. In the same year he was attached to the legation at Naples, where he married Eliza Birch, a wealthy English lady. He became secretary of legation at Florence in 1824, and in 1829 secured an election to the French Academy. Three years later he traveled in the East, but while at Jerusalem was notified of his election to the chamber of deputies and soon after returned to Paris, where he took an interest in political affairs and pursued his literary studies. In the Revolution of 1848 we find him a member of the provisional government that formed the republic, of which he became the first minister of foreign affairs. His able statesmanship brought him into popularity, and his promptness caused the suppression of several anarchistic insurrections. However, he soon lost favor and in 1851 withdrew from public affairs, engaging after that wholly in literary work. The government granted him a pension in 1867. His best writings include "History of the Girondins," "History of the Revolution of 1848," "History of Turkey," "Restoration of Monarchy in France," and "Harmonies, Political and Religious."

LAMB, Charles, humorist and essayist, born in London, England, Feb. 18, 1775; died there Dec. 27, 1834. Though his parents were poor, they provided for his education at Christ's Hospital. His industrious activity in London supplied him with the richest materials, and his mind became imbued with the spirit of the master writers. The fact that his sister, Mary Anne, about ten years older than himself, was subject to fits of insanity, caused him to be called upon to minister to her wants, and in 1796 she killed her mother while under the influence of the malady. Subsequently he cared for his sister a period of 38 years and the two shared in publishing four books for juveniles, entitled "Poetry for Children," "Tales from Shakespeare," "Adventures of Ulysses," and "Mrs. Leicester's School." He contributed to various periodicals, among them the *London Magazine.* Lamb was a contemporary of Coleridge and the two were fast friends. His "Specimens of the Old English Dramatists" was gathered from the writers of the Elizabethan



CHARLES LAMB.

age. By publishing this work he attained to a wide reputation as a critic and opened to the world treasures of poetry that were unknown to many readers. In 1818 he collected all his essays and verses, which he published as the "Works of Charles Lamb." Other writings include "Old Familiar Faces," "Essays of Elia," and "Farewell to Tobacco." His sister, Mary Anne, was born in 1764; died Sept. 3, 1847. Many of the writings of Lamb are still widely popular, are frequently republished, and have a favorite place in school readings, especially the "Tales from Shakespeare."

LAMB, Martha Joanna, authoress, born in Plainfield, Mass., Aug. 13, 1829; died in New York City, Jan. 2, 1893. Her career as a writer began at an early age. She married Charles A. Lamb in 1852, removed with her husband to Chicago, and there founded the Home for the Friendless. In 1866 she removed to New York and subsequently devoted her attention exclusively to literature. Her excellent "History of the City of New York" was published in two volumes in 1881. Two years later she became editor of the *Magazine of American History.* Her writings include "Play School Stories," "Wall Street in History," "Tombs of Old Trinity," and "Christmas Owl."

LAMBALLE (län-bäl'), **Marie Thérèse Louise of Savoy-Carignan, Princesse de,** victim of the French Revolution, born in Turin, Italy, Sept. 8, 1749. She married the prince of Lamballe in 1767 and soon after his death was chosen the companion of Marie Antoinette. When the king and queen attempted to flee from France, she found safety in England, but returned to France in 1792. In August of that year she was permitted to be confined with the queen, but when she refused to swear hatred against the king and queen on Sept. 3, 1792, she was cut to pieces by sabres and portions of her body were exhibited before the windows of the temple where the royal family was held captive.

LAMBAYEQUE (läm-bȧ-yȧ'kȧ), a town in Peru, capital of the department of Lambayeque, six miles from the Pacific Ocean. It is surrounded by an agricultural country and has a considerable trade in tobacco, sugar, and cereals. The manufactures include clothing, boots and shoes, and cotton and woolen textiles. Population, 1922, 8,140.

LAMBERT (lăm'bẽrt), **Daniel,** noted giant, born in Leicester, England, March 13, 1769; died June 21, 1809. At the age of 23 years he weighed 450 pounds, was five feet eleven inches tall, and was remarkable for great physical strength. At the time of his death he weighed 740 pounds.

LAMBERT, Johann Heinrich, philosopher and mathematician, born in Mühlhausen, Germany, Aug. 29, 1728; died in Berlin, Sept. 25, 1777. Though the son of a poor tailor, he secured a liberal education, and made remarkable progress in the study of philosophy, mathematics, and Oriental languages. In 1764 he became a member of the Academy of Science and of the Council of Architecture. In 1774 he had superintendence of the *Astronomical Almanac.*

LAMONT, Robert Patterson, public man, born at Detroit, Mich., Dec. 1, 1867. He studied at the University of Michigan and engaged in engineering. In 1891 he became associated with large contracting and manufacturing enterprises. During the World War he was chief of a division of the ordnance department in Washington. In 1929 he succeeded President Hoover as Secretary of Commerce.

LAMBERTVILLE, a city of New Jersey, in Hunterdon County, on the Delaware River, fifteen miles northwest of Trenton. It is on the Delaware and Raritan Canal and the Pennsylvania Railroad, and is connected by a bridge with Newhope, Pa. The manufactures include paper, rubber goods, flour, hardware, and machinery. It has electric lighting, waterworks, and a public library. The place was first incorporated in 1849. Population, 1920, 4,660.

LAMENTATIONS (lăm-ĕn-tā'shŭnz), **Book of,** a book of the Old Testament, written by the prophet Jeremiah. It treats of the destruction of Jerusalem, which it laments with much feeling, especially because the catastrophe was brought on by the sins of the Hebrews. The style of writing is poetic and the first five chapters are arranged in verses to correspond to the letters in the Hebrew alphabet, which circumstance has led some critics to believe that the fifth and last chapter may have been written by some contemporary of Jeremiah, instead of by the prophet himself. See **Jeremiah.**

LAMMERGEIER (lăm'mẽr-gī-ẽr), meaning, in German, lamb vulture, the largest bird of prey native to Europe. The nativity of this vulture is in the lofty mountains of the southern part of Europe and Asia and the northern part of Africa. It forms a connecting link between the true vultures and eagles, measures ten feet between extended wings, and is from four to five feet long from the beak to the tail. The lammergeier feeds on both carrion and living prey, including such animals as kids, lambs, chamois, and hares, which it carries to great heights in the mountains. It utilizes the bones of animals as a food by dropping them upon rocks from vast elevations, thereby breaking them into pieces suitable to be swallowed. See illustration on following page.

LAMONT (lȧ-mŏnt'), **Daniel Scott,** statesman, born in Courtlandville, N. Y., Feb. 9, 1851; died July 23, 1905. After attending McGranville Academy and Union College, he became the publisher of a newspaper, and later attained to influence as a Democratic leader of New York. In 1885 he was made private secretary to President Cleveland, and during the second term of the latter was Secretary of War. In 1897 he became vice president of the Northern Pacific Railway Company.

LAMP, a device employed for producing artificial light. The term is applied to vessels containing an inflammable liquid and a wick through which the liquid ascends by capillary attraction to feed the flame at the top, and likewise to any other contrivance for producing artificial light. In early times lamps were vessels of rude pottery or even the shells or skulls of animals, but later they were made of metal, glass, or porcelain, and became articles of ornament as well as utility. The substances used to produce light included fish oils and animal fats, but later vegetable oils, such as rape, were introduced. The flat wick was invented in 1783 and the round wick in 1784, the latter being known as the Argand wick from its inventor, Aimé Argand (1755-1803), a Swiss chemist.

LAMMERGEIER.

The discovery of mineral oils and their preparation in the form of gasoline, kerosene, paraffin, petroleum, and crystal oil made it necessary to introduce oxygen into the burner in order that the carbon contents might be consumed properly. A lamp supplying this requirement was first made by the inventor Stob Wasser in Berlin, Germany, and the chimney of mica, porcelain, or glass was constructed to increase the draught and protect the flame of the lamp. This arrangement causes a powerful draught to be created, by which the flame is kept uniform, and there is a constant consumption of the gas that generates from the oil being heated. At present there are many kinds of lamps, including those known as gas, oil, and safety lamps and lanterns. Many lamps have come into use for electric lighting, such as the arc, flaming arc, and incandescent lamps. The wicks used in oil lamps are either single flat wicks, round wicks, or double wicks. *Lanterns* are either portable or fixed. They are used chiefly for lighting outdoors.

LAMPBLACK, the soot or carbon deposit obtained by the imperfect combustion of petroleum, tar, resin, and other substances containing carbon. In burning the substances for lampblack it is necessary to shut out the free flow of oxygen, when the flame becomes smoky and the soot may be accumulated on suspended surfaces. Lampblack is useful in the manufacture of printing inks, shoe blacking, and paint. The effect of it is to produce the various shades of brown or black. In preparing lampblack for printing it is commonly mixed with linseed oil. It is prepared for use in painting by adding linseed oil and white lead.

LAMPMAN, Archibald, poet, born in Morpeth, Ontario, Nov. 17, 1861; died Feb. 10, 1899. He graduated at Trinity College, Ontario, in 1882, and began his career as a school teacher. Soon after he obtained a clerical position in the post office at Ottawa, where he died. His writings were published in the form of complete works under the editorship of Duncan Campbell Scott in 1900. Chief among his writings are "Lyrics of Earth" and "Among the Millet, and Other Poems."

LAMPREY (lăm'prȳ), a genus of animals which occupy a place between the eel and fish, differing from the true fish in that they do not possess scales, paired fins, or jaws. In appearance they are eel-like, attain a length of nearly three feet, and have a mouth in the form of a sucker. Most species have a greenish-brown color. They inhabit both fresh and salt water bodies, occurring in the North and South Temperate zones, and feed on larvae and worms. They frequently attach themselves by the mouth to other fish to suck the blood. The fresh-water lamprey is smaller than the marine, but both have been used as food for many centuries, and are caught by traps baited with flesh or worms.

LANCASTER (lăṉ'kȧs-tẽr), a city of England, capital of Lancashire, 45 miles northeast of Liverpool. It has a fine location on the Lune River and is connected by railway with Glasson Dock, its port five miles southwest. The manufactures include pottery, ironware, leather, cotton and woolen textiles, and clothing. It has a large market, slaughterhouses, public baths, electric lighting, and several technical schools. King John granted the first charter to Lancaster in 1193. Population, 1922, 43,308.

LANCASTER, a city in Ohio, county seat of Fairfield County, on the Hocking River and the Hocking Canal, thirty miles southeast of Columbus. It is on the Hocking Valley and the Pennsylvania railroads. The surrounding country is agricultural and produces coal and natural gas. Among the chief buildings are the county courthouse, the high school, the city hall, and the State industrial school for boys. The manufactured products embrace flour, woolen goods, shoes, agricultural implements, and machinery. The place was settled in 1800 and incorporated in 1831. It is the birthplace of General Sherman and John Sherman. Population, 1900, 8,991; in 1920, 14,706.

LANCASTER, a city in Pennsylvania, county seat of Lancaster County, on the Conestoga River, 35 miles southeast of Harrisburg. It is on the Pennsylvania and the Philadelphia and Reading railroads and has a network of electric railway lines. Besides other educational institutions, it contains Franklin and Marshall College, an institution for the higher education of men controlled by the German Reformed Church. This institution has a fine faculty of instructors, 550 students, and a library of 50,000 volumes. The noteworthy buildings include the county courthouse, a State normal school (at Millersville), the public library, the Saint Joseph's Hospital, the Steven's Home, and many schools and churches. It has manufactures of paper, machinery, automobile accessories, cotton and woolen goods, leather, ironware, and caramel products. It was settled in 1718, when it was known as Hickory Town, and was incorporated in 1742. The Continental Congress met at Lancaster in 1777, while the British were occupying Philadelphia, and it was the capital of the State from 1779 to 1812. Population, 1920, 53,150.

LANCASTER, House of, a dynasty founded in England in the reign of Edward III. Blanche, daughter of Edward III., married John of Gaunt, and a royal charter settled the duchy upon him and his heirs. Henry IV., son of John of Gaunt, born in 1367, was the first king of the house of Lancaster. His son, Henry V., succeeded him on April 10, 1413, and with the death of Henry VI., son of Henry V., ended the dynasty, which occurred May 22, 1471, though Henry VI. reigned only until 1461. See **England.**

LANCASTER SOUND, a channel of North America, located between North Devon and Cockburn Island. It connects Baffin Bay with Barrow Strait. This channel was discovered by Baffin in 1616. It is about 65 miles wide and 248 miles long.

LANCE, a weapon for thrusting, desinged to be used in the hand. It was used extensively by the knights of the Middle Ages, who employed it only when mounted, some of these weapons being twenty feet long. The modern lance is shorter, usually from ten to twelve feet, but the blade of steel, which is fitted on a handle of hollow steel or tough wood, is not more than a foot in length. Napoleon maintained several regiments of lancers, but the Russian Cossacks have the highest reputation for using this weapon, although it is now replaced in part by the saber. The German Uhlans carry the lance in addition to the carbine and saber. The use of modern firearms has displaced the lance to a large extent.

LANCELET (lȧns'lĕt), a peculiar fish found in the temperate and tropical seas. The body is lance-shaped, slender, compressed, and transparent. It has no true jaws or skull, has colorless blood, and moves with considerable activity. Breathing takes place by admitting water through the mouth. The common lancelet is about two inches long. Six distinct species have been studied, including the wolf fish and the handsaw fish of the Pacific.

LAN-CHOW (lăn-chou'), or **Lanchau,** a city of China, capital of the province of Kan-su, on the Hoang-ho River. The streets are well paved, but the buildings are chiefly of adobe brick and wood. Population, 1928, 500,000.

LAND CRAB, the name of many species of crabs that live on the land after they reach a mature state. The species are very numerous, but all of them are native to the warm countries. They are gilled animals, but breath air in the adult stage. In general respects they resemble the aquatic crabs. Their food consists largely of the tender parts of plants. In some localities they do injury to cultivated plants, especially sugar cane. The natives of the West Indies consider the mountain crab, which lives largely in the woods and hills, a good article of food. Land crabs are abundant in Ceylon, many parts of India, and the West Indies.

LANDGRAVE (lănd'grāv), or **Landgraf,** the title assumed by certain officers of Germany in the 12th century. It was frequently used in the simple form of *graf*. Sometimes it was preceded by certain words to indicate rank, such as *markgraf, burggraf,* and *landgraf,* meaning, respectively, marquis, burgrave, and landgrave. The whole empire of Charles the Great was divided into graf districts or counties, each presided over by a graf. Some of the princes likewise assumed the title at an early date, such as the landgraves of Thuringia and Lower Alsace.

LANDIS, Kenesaw Mountain, jurist, born at Millville, Ohio, Nov. 20, 1866. He was admitted to the bar and established a successful law practice in Chicago, Ill. From 1905 to 1922 he was a federal judge in Illinois, but resigned to become a commissioner for the National League of Professional Base Ball Clubs.

LAND LEAGUE, an organization formed by Michael Davitt under a plan formulated by Parnell in 1879 by which land in Ireland was to be purchased for the Irish tenants. Funds for this purpose were subscribed largely in America, but the movement was suppressed in 1881. Subsequently the National League, a political and agrarian organization, was formed for the purpose of bettering the condition of Irish tenants and advocating home rule for Ireland. The measures advocated by this organization were at least in part met by the Land Purchase Act of 1903, as amended in 1905 and 1907, under which many holdings were purchased by the actual occupants.

LANDON (lăn'dŭn), **Melville De Lancey,** humorist, born at Eaton, N. Y., Sept. 7, 1839. He graduated at Union College and received a position in the United States Treasury Department, which he resigned to join the staff of Gen. A. L. Chetlain in the Civil War. In 1864 he resigned from the army, having reached the rank of major, and became a cotton planter in Arkansas and Louisiana. He traveled in Europe in 1868, was for a time secretary of the United States legation in Saint Petersburg, and after 1870 resided in New York City. His writings are best known under the nom de plume of "Eli Perkins." He published "History of the Franco-Prussian War," "Kings of Platform and Pulpit," "Wit, Humor, and Pathos," "Eli Perkins on Money," "Wit and Humor of the Age," and "Thirty Years of Wit." He died Dec. 16, 1910.

LANDOR (lăn'dôr), **Walter Savage,** prose and poetical writer, born in Warwick, England, Jan. 30, 1775; died in Florence, Italy, Sept. 17, 1864. He studied at Rugby and Oxford, but left the university before graduating. After the death of his father, he succeeded to the family estates, and in 1808 joined the Spanish patriots, where he succeeded to the rank of colonel. He married Julia Thuillier in 1811 and resided in Italy the greater part of the time. His first volume of poems appeared in 1795 under the name of "Count Julian," and soon after appeared his "Gebir," by which he won the friendship of Southey. Landor ranks more eminently as a prose writer than as a poet, and his thorough classical scholarship enabled him to depict Greek and Roman characters with much facility and accuracy. At the time of his death he was an exile from his country and was misunderstood by the majority of his countrymen, but his productions later placed him in better esteem. His writings include several of much value, among them "Imaginary Conversations of Literary Men and Statesmen," "The Last Fruit Off an Old Tree," "Examination of Shakespeare," "The Hellenics," "Pericles and Aspasia," and "Letters by a Conservative."

LANDSCAPE, a tract of country, so called with reference to its appearance to the eye from some point of vantage. The term likewise has reference to what may be seen of nature in general, including the country with its groves and streams, as viewed in connection with a portion of the sky. In painting the term is applied to a picture that represents natural scenery, which may or may not include men and animals, though if any animate objects are shown they must appear as subsidiary. Landscape painting is comparatively more recent than that of figure subjects, though a celebrated school of this class became renowned in China as early as the 12th century A. D. The development of this kind of painting did not gain importance in Europe until the 17th century, when Ruysdael and other Dutch painters gave the system of painting landscapes a notable impetus. Lessing of Germany and Innes of the United States are representatives of distinct schools of landscape painting, the former of the so-called Düsseldorf School and the latter of the Hudson River School.

LANDSCAPE GARDENING, the art of laying out grounds so as to produce pleasing effects. It is concerned in arranging drives and walks, planting grass and flowers, constructing bridges and buildings, and setting shrubs and trees that the whole will form a harmonious combination and lend beauty to a lawn or park. This art has been practiced from times immemorable, and many references are made in history to the groves and villas provided by the ancients. However, landscape gardeners who make this work their exclusive business were not commonly employed until in the 19th century. At present many private lawns and parks, as well as public grounds in cities and those surrounding public buildings, are laid out with great care. Shrubs and trees are planted with the view of giving the most pleasing effects, viewed either at close range or from a distance, and various water courses, fountains, and artificial lakes are introduced.

LANDSEER (lănd'sēr), **Sir Edwin Henry,** animal painter, born in London, England, March 7, 1802; died there Oct. 1, 1873. He was the son of John Landseer (1769-1852), an eminent engraver, and was taught by his father to sketch animals and natural scenery in his early youth. When thirteen years of age, a number of his productions were exhibited at the academy and attracted marked attention. In 1866 he declined the presidency of the Royal Academy. Among his productions are "Cat's Paws," "Fighting Dogs Catching Wind," "Return from Deer Stalking," "The Stag at Bay," "High Life and Low Life," "Flood in the Highlands," "Return from Hawking," "Defeat of Comus," "Monarch of the Glen," "Jack in Office," and "Shepherd's Chief Mourner."

LAND'S END, the most southwesterly cape of England, directly opposite Scilly Isles. About a mile west of Land's End are the Longships Rocks, on which a modern lighthouse is situated.

LANDSLIDE, or **Landslip,** the settling down of a considerable portion of earth from a higher to a lower level, which is frequently the cause of damage to life and property. Landslides are caused by the action of water undermining the banks, which fall by decay of supporting strata, and sometimes as a result of slight earthquake disturbances. In many instances traffic on railroads has been delayed and in other cases entire villages were buried. A landslip occurred on the Isle of Portland in 1760, in which a tract equal to an area of a mile and a quarter suddenly spread over the lower level. Other instances include a landslide at Rossberg, Switzerland, in 1806; at Glarus, Switzerland, in 1881; and at Zug, Switzerland, in 1887. Another noted landslide occurred in the Himalayas at Naini Tal in 1880, when about 230 persons were killed.

LANDSTURM (länt′stōōrm), a term applied in Germany to the local militia, which is utilized only in case of actual invasion, and is constituted of men who are too old for the landwehr. This system has been adopted in many countries, notably in Austria, Greece, and Japan.

LANDWEHR (länt′vār), the military force of Germany, Austria, and other nations of Europe. It is called out only for occasional training in time of peace, but in war it takes its place in the regular army of defense and offense. The landwehr differs from a militia in that all landwehr soldiers have previous training.

LANE, Franklin Knight, public man, born in Prince Edward Island in 1864. He studied at the University of California and became a successful lawyer in San Francisco. President Roosevelt appointed him to the Interstate Commerce Commission, as a Democrat member of that body, and in 1913 he was made Secretary of the Interior. He died May 18, 1921.

LANE, Joseph, soldier and statesman, born in Buncombe County, North Carolina, Dec. 14, 1801; died at Roseburg, Ore., April 9, 1881. In 1861 he removed to Indiana, where he was elected to the State Legislature in 1822, which office he held until 1846, when he enlisted in the Mexican War, reaching the rank of major general. In 1848 he became Governor of Oregon and served as territorial delegate to Congress in 1851-57. He was United States Senator in 1859-61. In 1860 he ran for Vice President on the ticket with John C. Breckenridge.

LANFRANC (lăn′frănk), Archbishop of Canterbury, born in Pavia, Italy, about 1005; died in Canterbury, England, May 24, 1089. He descended from a noble family of Italy, studied at Pavia and Bologna for the profession of law, and in 1039 founded a law school at Avranches, France. In 1046 he was chosen prior of the monastery of Bec, and in 1066 became prior of the Saint Stephen monastery at Caen under appointment of the Duke of Normandy. Four years later he was made bishop of Canterbury, where he exercised much influence on the early church work of England. He published "Treatise against Berengar," "Sermons," and "Commentaries on the Epistles of Saint Paul."

LANG, Andrew, author, born at Selkirk, Scotland, March 31, 1844. He studied at Saint Andrews University, where he took a deep interest in the classics, and subsequently attended Baloil College, Oxford. In 1868 he was elected fellow of Merton College, and in 1888 became Gifford lecturer on national religion at Saint Andrews University. Besides translating from the French, he published a large number of books in verse and prose. His principal writings include "Helen of Troy," "Grass of Parnassus," "Magic and Religion," "Pickle, the Spy," "The Mark of Cain," "The Monk of Fife," "The Mystery of Mary Stuart," "Letters of Dead Authors," "Ritual and Myth," "Red Fairy-Tale Book," "History of Saint Andrews," "James VI. and the Gowrie Mystery," and "History of Scotland." He died July 21, 1912.

LANG, Benjamin Johnson, educator and composer, born in Salem, Mass., Dec. 28, 1837. His father was an organist and instructed him in music, and at the age of fifteen he was able to teach and compose. In 1845 he studied in Berlin, Germany, under the direction of Liszt, and returned to America the following year to continue his musical engagements. However, he returned to Europe in 1869 and played successfully in Berlin, Leipzig, and other cities, and in 1895 was made conductor of the Handel and Haydn Society. Subsequently he was connected with several musical associations of Harvard University, and became popular as a supporter of the music of Wagner. His daughter, Margaret Ruthven Lang (b. 1867), is noted as a composer of delightful songs and instrumental pieces. Her "Witichis" and "Dramatic Overture" are well known. He died April 4, 1909.

LANGLAND (lăng′lănd), **William,** poet, born at Cleobury, Mortimer, England, about 1332; died in 1400. It is thought that he studied at Great Malvern and subsequently lived in London. Little is known of his life. He is celebrated as the author of "The Vision of Piers Ploughman." It narrates the dreams of Piers Ploughman, who, weary of the world, fell asleep beside a stream in a vale among the Malvern Hills, pictures the obstacles which resist the progress of mankind, and presents the simple ploughman as the embodiment of virtue and truth. This poem is marked by a regular alliteration instead of rhyme.

LANGLEY (lăng′lĭ), **Samuel Pierpont,** astronomer and physicist, born in Roxbury, Mass., Aug. 22, 1834; died Feb. 27, 1906. His education was obtained largely in the Boston Latin School. He was elected assistant at the Harvard Observatory in 1865, and soon after became professor of mathematics in the United States Naval Academy at Annapolis. Two years later he was chosen professor of astronomy at the Western University of Pennsylvania, and subsequently made a number of important observations of eclipses under the auspices of the government. In 1887 he became secretary of the Smithsonian Institution. Among the distinguished honors granted him are the Rumford medal from the Royal Society of London, a membership in the National Academy of Sciences, and the presidency of the American Association for the Advancement of Science. Besides inventing the bolometer, an instrument to note slight changes in temperature, he devised a flying machine. He published "New Astronomy," "Internal Work of the Winds," and "Experiments in Aërodynamics."

LANGTON (lăng'tŭn), **Stephen,** cardinal and archbishop of Canterbury, born in Sussex, England, in 1150; died July 9, 1228. He studied at the University of Paris, of which he afterward became chancellor. Pope Innocent III. was his personal friend and in 1206 made him cardinal, and the following year consecrated him as archbishop. He was opposed by King John, but, after an interdict was placed upon England and John was excommunicated, Langton was permitted to enter upon his duties, in 1213. The same year he joined the insurgent barons, and gave them enthusiastic support in compelling John to sign the Magna Charta. In 1218 he crowned Henry III., and five years later demanded of him strict compliance with the Magna Charta. Several theological treatises were published by him.

LANGTRY (lăng'trĭ), **Lillie,** actress, born at Le Breton, in the Island of Jersey, off France, in 1852; died Feb. 12, 1929. She was the daughter of a clergyman, married Edward Langtry in 1874, and became known in English society as the "Jersey Lily." In 1881 she made her début at the Haymarket Theater, London, in "She Stoops to Conquer." The next year she played in America with great success. Her husband died in 1897 and two years later she married Hugo de Bathe. In 1903 she made another tour of America, starring in "The Crossways." Among her successes were those as *Pauline,* in "The Lady of Lyons;" as *Hester Grazebrook,* in "An Unequal Match;" and *Rosalind,* in "As You Like It."

LANGUAGES, the aggregate of those articulate sounds, called words, that are used to express perception and thought, and which are accepted by and current among the different communities. At present more than 1,000 different languages are spoken. They are more or less closely allied to each other, but differ to such an extent that people of different classes cannot successfully communicate with each other by means of speech. The tongues that are allied, but still differing from the principal languages, include many thousands. Some ancient writers think that language was originally revealed from heaven and that the form was Hebrew. These writers assume that all other languages originated from the Hebrew, but others think that Hebrew, Chaldee, and Arabic are only dialects of the original tongue.

Many scholars, among them Horace, Lucretius, and Cicero, expressed the view that language is of human invention, and that the sounds and words uttered by the primitive peoples under a process of evolution extended into the first languages. From the beginning accessions were made as education and discovery provided new requirements, such as still occur at the discovery of every new principle and the invention of new devices. This constant addition is exemplified in those that resulted after the invention of the telephone, telegraph, and improvement in electrical machinery, all of which added hundreds of words to the languages of civilized nations. Besides, it is evident that the more advanced the educational arts of a people, and the higher their civilization, the greater becomes the need for an extensive vocabulary and enlarged lexicons.

The three general groups of modern languages include the Chinese; those derived from the Aryan, or Indo-Germanic; and the Semitic. The *Chinese language* has many dialects. Its origin is unknown. That it existed for many centuries is apparent, being spoken as far back as any traces of Chinese history extend, and to-day it is the most widely used of all the languages. The *Aryan,* or *Indo-Germanic,* group of languages, is the most important in that it embraces the language of the best literature and of the most cultured nations of the world. It is classed in seven great branches: The Hindu or Indian, Iranian or Persian, Greek, Italic, Celtic, Slavonic, and Germanic. Each of these has many subdivisions; thus, the Germanic branch includes the German, English, Scandinavian, and Icelandic branches. The German language is an outgrowth of the Old Germanic, when it included the Gothic, Lombardic, Saxon, and many other dialects. The English language is principally an outgrowth of the German, but many words have been added from the Latin, French, etc. Besides, many original terms have been incorporated with it. The *Semitic* family of languages is next in importance to the Aryan group. It embraces the Arabic, Syrian, Assyrian, Babylonian, and Canaanitish dialects, and includes the more important Hebrew and Phoenician.

It is difficult to give an accurate statement of the exact number of people speaking the different languages for the reason that in some countries the dialects are mixed greatly and are changing constantly with various effects. It is reasonably certain that the Chinese is spoken by 410,000,000 people, while the Japanese is spoken by 50,000,000. The principal classes of the Aryan or Indo-Germanic group of languages are spoken in practically the following order: Hindu, 200,000,000; English, 148,000,000; German, 115,000,000; Russian, 112,000,000; French, 60,000,000; Spanish, 50,000,000; and Italian, 35,000,000. See **Aryan.**

LANIER (lă-nēr'), **Sidney,** soldier and poet, born in Macon, Ga., Feb. 3, 1842; died in Lynn, N. C., Sept. 7, 1881. He graduated at Oglethorpe College at the age of eighteen years, and soon after the capture of Fort Sumter enlisted in the Confederate army. His service in the battles near Richmond was especially efficient, but in 1864 he was taken prisoner and confined five months at Point Lookout, Fla. In 1867 he was engaged as teacher in an academy, and the following year formed a law partnership with his father at Macon. Soon after he produced a number of excellent literary works, and afterward devoted himself entirely to music and literature. His work was largely interfered with by delicate health, but his poems show fine ethical thought and excellent melody. Among his writings are "Boys' King Arthur," "Florida," "The Science of English Verse," "Boy's Percy," "Centennial Ode," "Tiger Lilies," and "The English Novel and Its Development."

LANKESTER (lăn̠'kĕs-tẽr), **Edwin Ray,** scientist, born in London, England, May 15, 1847. He studied at Christ Church, Oxford, and in 1874 became professor of zoölogy and comparative anatomy in University College, London. His writings include "Comparative Longevity," "Developmental History of the Mollusca," "Degeneration," and "The Advancement of Science."

LANSDOWNE, Henry Charles, statesman, born Jan. 16, 1845. He studied at Oxford and succeeded to the family titles in 1866, from which time he was an active member of the House of Lords. In 1883 he became Governor-General of Canada, in 1895 was made Viceroy of India, and later served as Secretary of Foreign Affairs. He entered the coalition ministry in 1915, but resigned at the ascendency of David Lloyd George. He died June 4, 1927.

LANNES (lȧn), **Jean,** Duke of Montebello and Marshal of France, born at Lectoure, France, April 11, 1769; died in Vienna, Austria, May 31, 1809. He was the son of a liveryman and studied the art of dyeing. In 1792 he enlisted for service in the army sent on a campaign into Spain and Italy, and by 1796 attained the rank of brigadier general. He accompanied Napoleon to Egypt in 1789, and later fought in Italy and Germany. In 1809, at the Battle of Aspern, he lost both legs, which caused his death.

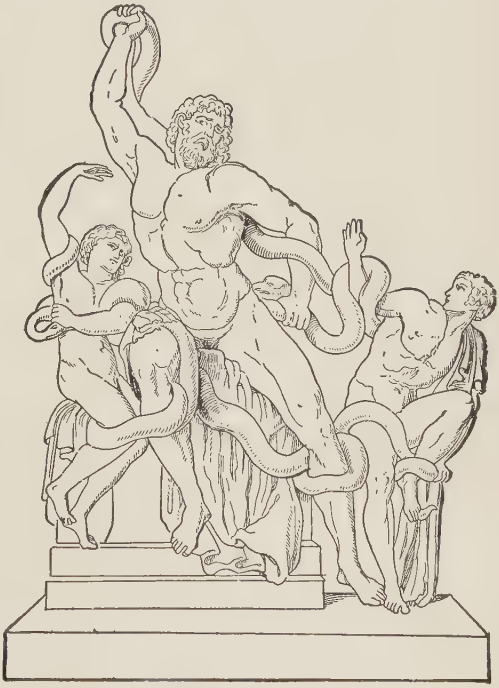
LANSING (lăn'sĭng), the capital of Michigan, in the northern part of Ingham County, on the Grand River, 88 miles northwest of Detroit. It is on the Michigan Central, the Grand Trunk, the Père Marquette, the New York Central, and several electric railroads. The noteworthy buildings include the State capitol, the county courthouse, the high school, the public library, the city hall, the Michigan School for the Blind, and the State College of Agriculture, the last named having 1,878 students and a library of 85,000 volumes. The place was settled in 1837, became the capital in 1847, and was incorporated in 1859. Population, 1920, 57,327.

LANSING, Robert, lawyer and statesman, born at Watertown, New York, Oct. 17, 1864. He studied at Amherst College, was admitted to the bar, and practiced law, representing the United States in the Behring Sea Arbitration and other cases. In 1913 he became an attaché of the secretary of state and when Bryan resigned in 1915, he was made secretary of state under President Wilson. He was one of the American Commissioners at the Paris Peace Congress in 1919. He died Oct. 30, 1928.

LANSINGBURG, a former village of Rensselaer County, New York, on the Hudson River, annexed to Troy in 1901. Two substantial bridges across the Hudson connect it with Cohoes and Waterford. It was founded by Abraham J. Lansingh in 1771. Population, 1920, 10,823.

LANTERN FLY, an insect which is allied to the cicadas. The genus includes about twenty species, some of which are widely distributed in the tropical regions of both hemispheres. Many are large and highly colored. Some are remarkable because of the forehead being formed in the semblance of a bag. Most of the species are about three inches long and five inches across the wings. They move about most commonly during sunshine and feed on herbs and grasses.

LAOCOÖN (lȧ-ŏk'ô-ŏn), in Greek legend, a priest of Apollo and Neptune, located in the city of Troy during the Trojan War. It is asserted that while he and his two sons were in the temple performing the sacrifice, two enormous serpents arose out of the sea and proceeded directly to the altar. The serpents entwined themselves about the helpless youths and the father, and all were destroyed in the presence of the Trojan multitude. This event was taken by the Trojans to indicate the displeasure of Zeus on account of Laocoön warning the people against admitting the wooden horse into the city. The incident is of interest on account of many beautiful groups of sculpture having been made to represent it,


LAOCOÖN GROUP.

and because many Greek poets mention it in their writings. The most beautiful group of sculpture representing Laocoön and his sons was discovered at Rome in 1506 and is now in the Vatican. Pope Julius II. purchased it shortly after its discovery, but Napoleon took possession of it in 1796, and in 1814 it was replaced. It is thought to be the group mentioned by Pliny.

LAODICEA (lȧ-ŏd-ĭ-sē′ȧ), the name of several ancient cities of Asia Minor, the most important of which was situated near the Lycos River in Phrygia. It was founded by Antiochus Theos and named after his queen Laodice. As a center of philosophy, art, and science it took high rank and became the seat of two important ecclesiastical councils, one in 363 A. D. and the other in 476. Its importance in the primitive history of Christianity is accounted for by the large number of Jews that settled there at the beginning of the Christian era. It is now entirely in ruins and is known as Eski-Hissar.

LAOS (lä′ōs), or **Laotians,** a distinct class of Mongolians who occupy the northeastern portion of Siam, regarded the original Siamese race. Formerly they constituted a powerful kingdom, but in 1828 were conquered by the Siamese, and since then have been subject to them. The Laos are divided into two main divisions, the so-called White Paunch and the Black Paunch. The two branches occupy different regions, but they are related more or less closely and agree in the support of Buddhism and in their semicivilized government. They are peaceable, industrious, and fond of music. These people engage chiefly in fishing, rice and vegetable culture, and poultry and stock raising. They have schools, temples, and fixed homes. Their total number is about 1,500,000. The region occupied by the Laos, known as Laos, has an area of 116,000 square miles. Since 1893 it has been a French protectorate.

LA PAZ (lä päz′), a Mexican town and seaport, situated in Lower California, capital of the state of Baja. The harbor on La Paz Bay is commodious. It has a large trade in pearlfish and minerals. In its vicinity are extensive stock ranches and orchards. Population, 1922, 7,044.

LA PAZ, a city of Bolivia, capital of a department of the same name, on the Chuquiaqu River. It is thirty miles southeast of Lake Titicaca, in a fertile valley, and has an elevation of 11,950 feet above sea level. The city contains some excellent buildings, has a public school system, and is the seat of a seminary, college, medical school, cathedral, and university. It is the residence of a bishop and has a number of convents. It has an extensive trade in alpaca wool, tobacco, copper, lumber, gold, and silver. The manufactures include textiles, furniture, machinery, clothing, and vehicles. The inhabitants consist largely of mixed races and Aymara Indians. Population, 1922, 77,235.

LAPIDARY (lăp′ĭ-dȧ-rў), one skilled in the art of working in stones, especially precious stones. The lapidary art was developed by the ancients. Remains of stone implements found in cave dwellings and other habitations are among the earliest examples of the art. Assyrian workmen invented the drill for penetrating hard substances prior to the year 760 B. C. Beautiful specimens of seals and engraved rings made by the Greeks as early as 600 B. C. attest their advancement along this line. It is thought that the Hindus and Chinese were acquainted with the cutting, engraving, and polishing of small stones very early in history, but the art was not developed as it applies to diamond cutting in Europe until 1475, when Charles the Bold of Burgundy had the first expensive diamond prepared in Europe. Formerly this class of work was done by hand, when it was effected by the powder of a harder stone being rubbed against a softer one, but subsequently different tools were adapted to machine use. The machinery consists of very accurate appliances. In the process three stages are necessary: cutting or slicing, grinding, and polishing. The cutting is done to prepare the general outline of the product desired; the grinding, to bring it to its proper form and shape; and the polishing, to give it a beautiful surface finishing. Formerly polishing was done by a pewter with stone coating, but at present it is effected with a wheel covered with some substance suitable for polishing, such as walrus hide. The kind of tools used depends entirely upon the stone to be treated.

LAPIS LAZULI (lā′pĭs lăz′ū-lī), or **Armenian Stone,** a rich blue mixture of minerals, of which the principal component is lazurite. It was employed largely by the ancients for decorative purposes. It occurs principally in crystalline limestone in North and South America, Thibet, Russia, China, and many other countries. When powdered, it constitutes a durable blue paint called *ultramarine,* which was employed formerly to some extent, but it has been replaced by an artificial preparation of similar composition that is equal in color and durability, and is now used extensively in the arts. Imitations of lapis lazuli are made of bone ashes colored with oxide of cobalt.

LAPLACE (lȧ-pläs′), **Pierre Simon, Marquis of,** mathematician and astronomer, born in Beaumont-en-Auge, France, March 23, 1749; died in Paris, March 5, 1827. He was educated in his native town and Caen, taught mathematics in the military school at Beaumont, and later went to Paris. While there he approached D'Alembert with letters of recommendation, and, after impressing him with his treatise on dynamics, he secured a professorship in the Royal Military Academy, in which capacity he became noted. In 1773 he became an associate in the Academy of Sciences, was made a member of it in 1785, and attained eminence by establishing the fixity of the solar system, announcing the so-called "Three Laws of Laplace." He demonstrated an exact theory of the phenomena of the tides and of the satellites of Jupiter. Subsequently he aided in the establishment of normal schools for teachers, thus laying a foundation for systematic education, and became recognized as one of the greatest thinkers of his age. Napoleon appointed him minister of the interior, although he was deposed after six weeks, but later was raised to the dignity of a count. Louis XVIII., after the second restoration, made him a peer and a marquis. It is related that his last words were: "What we know is of small amount; what we do not know is enormous." He published valuable works on pure mathematics, mechanics, heat, astronomy, and electricity.

LAPLAND (lăp′land), a large section of Northwestern Europe, the nativity of the Lapps, comprising an area of about 95,000 square miles. It is bounded on the west by the Atlantic, on the north and east by the Arctic, and on the south by the White Sea and by about the parallel of 66° north latitude. The region belongs partly to Russia, Finland, Sweden, and Norway. In the western part it is mountainous, but in the eastern part is a plain with numerous rivers and lakes. The two seasons are designated as day and night, the night season being nine months and extremely cold, while the day season is three months of continuous day, of which about six weeks are quite warm and pleasant. Vegetation consists largely of mosses and small timber, including birch, fir, and pine. Few domestic animals are reared, aside from reindeers and dogs. Hunting and fishing are the principal occupations, though there are some developments in the culture of reindeer, vegetables, fodder, and rude manufacture. The lakes and coastal waters are rich in fish, particularly the White Sea and lakes Kuto, Kano, Enara, and Imandra.

The Lapps are classed as Turanians, belonging to the Finnic branch. They are small in stature, have a flat nose, high cheek bones, and a scanty beard. Most of these people are muscular and have red hair. The life of many is nomadic in the summer season, when they hunt and fish, laying by a portion of the necessary supply for winter. Nearly all the Scandinavian Lapps are Lutheran, while those of Russia affiliate with the Greek Church. So far as known they were subject to the Norsemen up to the 12th century, since which time they were conquered by and alternately subject to Norway, Russia, and Sweden. The nomadic tribes speak a variety of dialects. All have shown a marked obedience to their government. The total number of Lapps is 30,408, of which about half are in Finland.

LA PLATA (lä plä′tȧ), a city of Argentina, capital of the state of Buenos Ayres, 32 miles southeast of the city of Buenos Ayres. It is the converging center of several railroads and electric railways. The streets are regular and well paved with brick and stone. Among the noteworthy buildings are the public library, the capitol, the courthouse, the union railway station, splendid churches, an observatory, a college, and a museum. The manufactures embrace cotton and woolen goods, machinery, clothing, furniture, ironware, soap, tobacco, leather goods, and utensils. A canal connects the city with its harbor, Ensenada, on the La Plata River. La Plata was founded in 1882 and owes its rapid growth to the large trade and various manufacturing enterprises. Population, 1922, 119,402.

LA PLATA, Rio de. See **Plata, Rio de la.**

LAPORTE (lȧ-pōrt′), a city in Indiana, county seat of Laporte County, 12 miles from Lake Michigan and 58 miles from Chicago, Ill. It is on the Père Marquette, the New York Central, the Nickel Plate, and several electric railroads. The chief buildings include the county courthouse, the high school, the public library, and a number of fine churches. Among the manufactures are tires, threshers, engines, woolen goods, cigars, clothing, and machinery. It has well-graded streets, sewerage, and waterworks. The place was settled in 1830 and incorporated in 1832. Population, 1900, 7,113; in 1920, 15,153.

LAPWING (lăp′wĭng), a genus of birds of the plover family, native to the temperate parts of Asia and Europe. In autumn they move southward to spend the winter. They are about the size of a pigeon, frequent marshes and woodlands, and from their peculiar cry are frequently called *peewit*. Both the birds and their eggs are hunted for food, the eggs being laid largely in cultivated fields, marshes, and depressions on the plains. The length of the common lapwing is about twelve inches. The color is variegated, but usually brownish-red, and the male has a crest of feathers on the head, which is most prominent in the winter time. They were named lapwing from their habit of luring intruders away from their nest by appearing to be lame.

LARAMIE (lăr′ȧ-mē), a river of Wyoming, rises in the northern part of Colorado, and after a course of about 200 miles toward the northeast joins the North Platte River at Fort Laramie. The river passes through a country which is rich in minerals. It is not navigable, but is utilized for rafting lumber cut in the mountains.

LARAMIE, a city in Wyoming, county seat of Albany County, on the Laramie Plains, at an elevation of 7,122 feet above sea level. It is 56 miles northwest of Cheyenne, on the Union Pacific Railroad and on the Laramie River. The noteworthy buildings include the county courthouse, the State Agricultural College, the State University, the State penitentiary, and the State fish hatchery. It has electric street lighting, a public library, telephone connections, and waterworks. Besides extensive railroad and machine shops, it has manufactures of flour, soda, glass, soap, building stone, machinery, leather, and bottled goods. The place was first settled in 1868 and was incorporated as a city in 1884. Population, 1905, 7,601; in 1925, 9,629.

LARAMIE MOUNTAINS, a mountain range of North America, extending from the central part of Wyoming into Colorado. The formations are composed largely of carboniferous, triassic, jurassic, and cretaceous formations, with fossiliferous deposits in many localities. Coal is the principal mineral. Laramie Peak, 10,000 feet high, is the culminating point.

LARCENY (lär′sē-nȳ), the taking and removing of personal property belonging to another, with the intent of depriving the owner of what belongs to him. The crime of larceny is usually divided into two kinds, known as *petty* and *grand,* though the distinction is abolished in some of the states and nations. Where these terms are recognized, they are used to designate crimes punishable by different penalties. Petty larceny is the designation when the value of the property stolen is small and the criminal may be tried and punished in a lower court. A charge of grand larceny is subject to investigation by the grand jury and the punishment is imprisonment in the penitentiary at hard labor.

LARCH (lärch), a genus of deciduous trees, bearing leaves in clusters and having cones. The American species are commonly known by the name of *tamarack,* or *kackmatack,* and are native to the northern portion of North America, particularly in the Allegheny Mountains. Several species abound, most of which grow from 15 to 45 feet high and are valuable for the quality of their wood. The *common larch* native to Switzerland, Germany, and Italy is noted for the durability of its wood, while the *golden larch* of Japan is counted the most beautiful tree and attains a height of 125 feet. Many species, especially those of Asia, grow to a height of 60 feet and thrive fully 250 years. The wood is inclined to warp and does not easily decay, owing to the resinous properties. Some of the species yield bark for tanning and a gummy substance useful for cement and in medicine.

LUCY LARCOM.

LARCOM (lär′kŭm), **Lucy,** poetess, born in Beverly, Mass., in 1826; died April 15, 1893. Her father died when she was but twelve years of age, and, after attending school three years, she engaged in a cotton mill as a factory hand. At the age of twenty she entered the Monticello Female Seminary in Illinois for three years' study, and subsequently taught in the Norton Field Seminary of Massachusetts. From 1866 until 1874 she was editor of *Our Young Folks.* She wrote many poems during the Civil War. Her published works include "Wild Roses of Cape Ann," "Childhood Songs," "Ships in the Mist," and "An Idyl of Work." She edited several collections of poems, including "Roadside Poems for Summer Travelers" and "Hillside and Seaside in Poetry."

LARD, the product obtained from the fat of swine by heating to the boiling point and straining. Lard is composed chiefly of stearine and oleine, in proportion of 62 parts oleine to 38 parts of stearine and palmatine, and is used for various purposes in culinary arts. It enters largely into the manufacture of soap, pomades, and lubricating oil. The enormous production of pork in America led to the separation of the oleine and stearine, which is done by pressure at a low temperature. The former is used as lard oil for lubricating machinery and the latter serves in the manufacture of candles. Much of the best quality of lard is secured from the fat that surrounds the kidneys, from which ointments are prepared.

LAREDO (lȧ-rā′dō̇), a city in Texas, county seat of Webb County, on the Rio Grande, 152 miles southwest of San Antonio. It is on the Mexican National, the International and Great Northern, and other railroads, and is connected by several bridges with Nuevo Laredo, Mexico. The chief buildings include the courthouse and jail, the Holding Institute, the Mercy Hospital, the Ursuline Academy, and the high school. It is the seat of extensive machine shops, is noted for its importance as a wool-shipping point, and within its vicinity are copper, lead, iron, zinc, and coal mines. The manufactures include machinery, earthenware, cigars, and utensils. It has modern municipal facilities, including electric railways and lights, city sewerage, and waterworks. Laredo was settled by the Spaniards in 1767 and became incorporated in 1848. Population, 1900, 13,429; in 1920, 22,710.

LARES AND PENATES (lā′rēz, pē̇-nā′tēz), in legends, the protecting spirits among the ancient Romans, associated with domestic protection. The Lares came to the Romans from the Etruscan religion and the Penates from their early ancestors. They were worshiped by the Roman people under the form of two youthful warriors, who were in later times identical with Castor and Pollux. In many of the homes small images of these deities were placed as decorations round the hearth, and in the mansions of the rich they occupied separate apartments. They were adorned with wreaths on joyful occasions.

LARK, a genus of birds of song, resembling the finches in many respects. This genus includes many species, various kinds being native to all the grand divisions and many islands. Among the best known are the meadow lark, skylark, wood lark, and shore lark. These birds are migratory, passing early in the spring to the higher latitudes, where they nest in hollows and depressions in the ground. The common characteristics include a forked tongue, a short bill, feathers covering the nostrils, and straight hind claws. The color is variegated, but is largely sandy-brown with marking of black and yellow. The song is shrill and quite rare, except in flight, the skylark being celebrated for its prolonged song of much beauty while on the wing. In many European countries larks do damage to cereal crops. At that season they are caught in nets and sold on the market for their delicate flesh. The food consists chiefly of insects, larvae, and seeds.

SKY LARK. SHORE LARK.

LARKSPUR, an annual plant found in the Temperate Zone, so-called because the petals are spurred. The flowers are prolific, generally blue, and many varieties of colors have been developed by propagation. Among the species are the branching larkspur, upright larkspur, and rocket larkspur. These species are grown extensively as garden flowers.

LARKSVILLE, a city of Luzerne County, Pa., on the Lackawanna and other railroads. It has large mining and manufacturing interests. The chief buildings include the high school, city hall, and churches. Population, 1920, 9,438.

LA ROCHEFOUCAULD (lȧ rôsh-fo͞o-kō′), **François, Duke of,** courtier and maxim writer, born in Paris, France, Sept. 15, 1613; died there March 17, 1680. His father was a duke under Louis XIII., and François became known as Prince de Marsillac in his early youth. At the age of seventeen he entered the army, took part at the siege of Casale, and was exiled by Richelieu to Blois for supporting the party of Queen Anne of Austria. He remained an exile from 1639 until 1643, supported several military exploits, and subsequent to 1653 engaged largely in literary work in his native country. In 1662 he published his "Memoirs" and later his "Réflexions, ou sentences et maximes morales."

LARVA (lär′vȧ), a term applied to the first stage in the development of insects, in which the young, after issuing from the egg, undergo a change of form known as *metamorphosis.* At this stage they are very different from the adults. The larval stage is so called because the form of the young masks or conceals that of the adult. It differs from the early stage in animals whose young are similar in form to the parent, the term *foetal stage,* or *fetal state,* being applied in the latter case. The greater part of growth in insects is developed during the larval state, and the skin is shed from time to time as may be required by the enlargement of the growing body. The *tadpole* is the larva of the frog; the *maggot,* of the fly; the *zoëa,* of the crab; and the *caterpillar,* of the moth or butterfly. See **Beetle.**

LARYNX (lăr′ĭn̲ks), the special organ of voice, situated at the upper part of the windpipe, or trachea, and at the base of the tongue, immediately below the hyoid bone. The larynx forms a projection of cartilage, known as *Adam's apple.* It consists of a cartilaginous box, across which are stretched folds of mucous membranes. These membranes constitute the vocal cords, which, by their vibration, due to passing of air from the lungs, produce sound. The glottis is a cleft or opening between the vocal cords at the upper orifice of the larynx, while the epiglottis is a leaflike lid upon the back of the tongue, which closes the larynx when swallowing. See **Voice.**

LASALLE (lȧ-săl′), a city of Lasalle County, Illinois, on the Illinois River, 98 miles southwest of Chicago. It is on the Illinois and Michigan Canal and on the Illinois Central, the Chicago, Burlington and Quincy, and the Chicago, Rock Island and Pacific railroads. The surrounding country is agricultural and dairying and contains deposits of bituminous coal and building stone. It has a public library, a fine high school, several large churches, waterworks, and electric street railways. Among the manufactures are zinc products, cement, bottled goods, ironware, and machinery. It has a large trade in produce and merchandise. Lasalle was settled in 1830, when it was named after La Salle, the explorer. Population, 1920, 13,050.

LA SALLE (lȧ săl′), **René Robert Cavelier, Sieur de,** celebrated explorer, born in Rouen, France, Nov. 22, 1643; assassinated March 19, 1687. In 1669 he emigrated to Canada, having previously been ordained as a priest, and soon after entered upon a number of remarkable expeditions of discovery. He visited the Illinois River, Lake Michigan, and the Ohio, and sailed a considerable distance down the Mississippi. In 1673 he received a grant of Fort Frontenac, now Kingston, and in 1677 returned to France. The following year he made a second voyage to America, ascended to Mackinaw, thence crossed Lake

RENÉ-ROBERT LA SALLE.

Michigan, and proceeded down the Illinois River to Peoria. On April 9, 1682, he planted the French flag on the Gulf of Mexico and claimed the entire Mississippi River basin for Louis XIV. In 1684 he organized an expedition, which sailed directly from France for the mouth of the Mississippi, where he was commissioned to establish a settlement. In this enterprise he made a failure. He failed in an effort to find the chief mouth of the Mississippi, but landed at Matagorda Bay, and after many fruitless efforts was murdered by his followers within the present confines of Texas. Many conflicting statements have been published regarding the life and achievements of La Salle. A very interesting account is given in Parkman's "Discovery of the Great West."

LAS CASAS (lȧs kä′sȧs), **Bartolomé de,** evangelist and philanthropist, born in Seville, Spain, in 1474; died in Madrid, in July, 1566. He was of French descent, studied at Salamanca, and accompanied Columbus on his third voyage to America. In 1502 Don Nicolas Ovando was sent as governor to Hispaniola and Las Casas accompanied him, where he was ordained to the priesthood in 1510, and the following year proceeded to Cuba to pacify the island. His work in behalf of humane treatment of the Indians did much to alleviate their pitiful condition, and he inaugurated a number of reforms in the application of slave labor, which he endeavored to suppress. His efforts were extended to a project for the purpose of planting Spanish colonies, but, failing in this, he sailed to Spain and later returned to America to spend a number of years in missionary work, visiting Mexico, Guatemala, Nicaragua, and Peru. In 1544 he became bishop of Chiapas, in which position he effected many reforms of material value to the natives, but, when Charles V. revoked laws favorable to the material improvement of the natives, he resigned. Though opposed to slavery, he advocated the importation of African laborers to supply Cuban planters for the reason that he deemed them more capable of discharging the work required than the native Indians. He advocated peaceful procedure, designating war as unjust and destructive to the best interests of the island. His greatest work is "General History of the Indies." He died in a convent at Madrid after returning to Spain.

LAS PALMAS (lȧs päl′mȧs), the largest city of the Canary Islands, on the northeastern shore of the island of Gran Canaria, in a fertile and productive valley. It has a fine harbor, which is fitted for the largest ships. The noteworthy buildings include the public library, the theater, the city hall, an academy of art, and several large churches. Among the manufactures are hats, wine, glass, clothing, and leather goods. It has a large trade in coal, fruits, and merchandise. The place was founded by Juan Rejon in 1478 and was the capital of the Canary Islands until 1833, when the seat of government was transferred to Santa Cruz de Tenerife. Population, 1922, 45,471.

LASSALLE (lä-sȧl′), **Ferdinand,** socialist and economist, born in Breslau, Germany, April 11, 1825; died Aug. 31, 1864. He descended from a Jewish family of merchants, studied at Breslau and Berlin, and attained a reputation for remarkable native ability and strength of mind. At Berlin he met Humboldt and at Paris formed the acquaintance of Heine, both of whom were attracted by his advanced views in philosophy and philology. In 1845 he championed the cause of Countess Harzfeldt, who had become separated from her husband, and after some time forced a favorable compromise. Favoring the Revolution of 1848, he was imprisoned for his democratic expressions. In 1858 he published a treatise on the philosophy of Heraclitus and in 1861 completed a work on the philosophy of law, entitled "The System of Acquired Rights." Subsequently he issued many pamphlets, delivered lectures on the labor question, and organized the social-democratic party of Germany. The Universal German Workingmen's Association was founded by him at Leipzig and other similar organizations were promoted in different parts of Germany. His work, "Italian War and the Mission of Prussia," was circulated extensively and had its influence in withholding support from Austria in its war with France. A duel fought near Geneva caused him to be severely wounded on the morning of Aug. 28, 1864, from the effect of which he died a few days later.

LASSO (lăs′sō), a long line with a running noose, used chiefly in Spanish America, Mexico, and the western part of the United States for catching horses and cattle. It is usually made of rawhide, but also of sisal rope and hair. One end of the lasso is attached to the saddle, while the other has a sliding noose formed by rings, which the horseman throws over the head or around the foot of the animal while in full gallop, and thus succeeds in catching the desired animal. In the United States it is frequently called a *lariat* and in Mexico a *la reata.*

LAS VEGAS (läs vā′gȧs), a city and the county seat of San Miguel County, New Mexico, on the Pecos River, 42 miles east of Santa Fé. It is on the Atchison, Topeka and Santa Fé Railroad, has a large trade in wool and live stock, and is surrounded by a grazing and gold and silver mining country. The chief buildings include the public library, the Castanenda Hotel, the courthouse, and the New Mexico Normal University. It has extensive railroad shops, flour mills, machine shops, wool scouring works, and brick and cigar factories. In its vicinity are the Las Vegas Hot Springs, a popular resort, whose waters are noted for their curative effects. It was formerly called East Las Vegas, but was incorporated as Las Vegas in 1896. Population, 1908, 8,145; in 1920, 4,304.

LATERAN (lăt′ẽr-ạn), a celebrated church in Rome, Italy, founded by Constantine the Great and by him dedicated to the Savior. It was rebuilt in the 12th century by Lucius II. and dedicated to Saint John Lateran. The church was maintained in the original form up to 896, when it was destroyed by an earthquake, but was rebuilt shortly after and has been remodeled many times. The palace annexed to it served as the papal residence until the 14th century, but is now in possession of the Italian government. The Scala Santa, or Holy Staircase, which is reputed to have served in the house of Pilate at Jerusalem, and to have been trod by our Lord as he passed to judgment, is preserved in the piazza of Saint John Lateran.

LATHE (lāth), a machine for shaping materials by turning. The work is done through a rotary motion, which is obtained in most cases by steam or electric power. Many forms of the lathe are in general use, depending upon the work to be done, such as cutting and polishing flat, oval, or cylindrical objects of wood, metal, or ivory. Small lathes are run by foot power. Those used for cutting wood have a much higher speed than those used in turning metal. The turning tool is held by the workman or by a tool holder attached to a movable slide rest, and the material to be shaped is sustained by two heads or centers. The finest crucible carbon steel is used in making lathe tools. The largest lathes are used in finishing heavy ordnance and in turning marine engine shafts, and from these they grade down to the delicate forms employed in finishing the finer parts of watches and scientific instruments.

LATHROP (lā′thrŭp), **George Parsons,** editor and author, born in Honolulu, Hawaiian Islands, Aug. 25, 1851; died in New York City, April 19, 1898. He was educated in Germany and in 1871 married Rose, the second daughter of Nathaniel Hawthorne. In 1875-77 he was editor of the *Atlantic Monthly,* and afterward edited the Boston *Courier.* Besides editing the works of Nathaniel Hawthorne, he published "A Study of Hawthorne," "The Rose and Rooftree," "An Echo of Passion," "Dreams and Days," and "A Story of Courage."

LATIMER (lăt′ĭ-mẽr), **Hugh,** reformer and martyr, born at Thurcaston, in Leicestershire, England, in 1490; suffered martyrdom, Oct. 16, 1555. He studied at Cambridge, was elected a fellow of Claire in 1510, and in 1523 was ordained priest at the university. Soon after he embraced the reformed doctrines, became chaplain to Henry VIII. in 1530, and in 1534 was made Bishop of Worcester. Continuing the work of reform, he was imprisoned at the Tower at various times, but in the reign of Edward VI. he attained to popularity at court, though after the death of Edward his earnest religious work was checked. In 1554 he and others, including Cranmer and Ridley, were tried by a council at Oxford, and he was confined in a jail more than a year. Commissioners passed judgment upon him and Ridley, after going through a form of trial, and the two suffered martyrdom in 1555. Latimer was a plain man. He was cheerful in disposition and noble in qualities. As a preacher of the gospel he was brave and energetic.

LATIN LANGUAGE. See **Rome.**

LATINS, or **Latini,** the inhabitants of ancient Latium, in Italy, and from whom the language of Rome was obtained. These people were of great antiquity and their distinguished leader, Ascanius, son of Aeneas, aided in building the town of Alba Longa, which was the most important of their cities. Since Rome was held as a colony of Alba Longa, the Latin language was adopted by the Romans.

LATITUDE (lăt′ĭ-tūd), in geography, the term applied to distance north and south from the Equator, reckoned in degrees, and measured along the meridians. Latitude at the Equator is the smallest or lowest and is marked 0°, and distance from it is designated *north* or *south* respectively as the locality is north or south from the Equator. Since there are only 360° in any circle, and the distance from the Equator to the poles is one-fourth of an entire circle, 90° is the greatest value of latitude a place can have, thus the poles are each marked 90°. There may be any number of parallel circles imagined drawn between the poles and the Equator, these being designated *parallels of latitude,* and, if their distance in degrees from the Equator is known, it is not difficult to locate a place in latitude. When the longitude of a place is associated with its latitude, an exact locality on a sphere or map may be designated. See **Longitude.**

LATOUR D'AUVERGNE (lȧ-tōōr′ dō-vârn′y′), **Théophile Malo Corret de,** soldier, born in Carhaix, France, Nov. 23, 1743; died June 27, 1800. He studied at a military school and entered the army in 1767. For some time he served under the Duke of Crillon at the siege of Port Mahon. After the French Revolution he distinguished himself in the armies of the Alps and Pyrenees. Napoleon made him the first grenadier of France and sent him a sword, but he refused to accept it, saying: "Among us soldiers there is neither first nor last." He took part at the Battle of Neuburg, in Bavaria, where he fell in action. A monument was erected to his honor on the place where he died.

LATTER-DAY SAINTS, or **Reorganized Church of Jesus Christ of Latter-Day Saints,** a body of the Mormon Church, which stands in opposition to the Mormons that have their principal seat of activity at Salt Lake City. It dates from 1844, when a schism occurred in the church, immediately after the death of Joseph Smith, and its promoters claim succession from the original organization. Its chief institutions are at Lamoni, Iowa, where the principal officials reside and several fine educational institutions are maintained. The tenets of faith are founded upon the Bible and the Book of Mormons, both of which are held to be inspired, plurality in marriage is opposed, and strict discipline is enforced. There are 1,450 ministers, 650 churches, and a membership of 80,560. See **Mormons.**

LATVIA, a republic of Europe, bounded by the Baltic Sea, Esthonia, Russia and Lithuania. It became independent in 1920, when it was formed of Courland and parts of Vitebsk and Livonia. The area is 40,053 square miles. Riga is the capital and chief seaport. Population, 1923, 1,764,800. See **Letts.**

LAUD (la̤d), **William**, Archbishop of Canterbury, born in Reading, England, Oct. 7, 1573; beheaded on Tower Hill, Jan. 10, 1645. He studied at Oxford, where he took a degree in 1598, and in 1601 was ordained a priest. His profound learning and industry gained many friends and, after holding several important educational positions, he became chancellor of Oxford in 1630. He was made Archbishop of Canterbury in 1633. It was designed to establish the Church of England as a branch of the Catholic church, and with this intent he entered upon the plan of forcibly abolishing Puritanism. The Puritans were hunted down by spies and fines were levied on all those who dissented from his church. Many Dissenters were imprisoned and exiled. Active armed hostilities commenced when vigorous efforts were inaugurated to destroy Presbyterianism in Scotland, which gave rise to the controversy with the Long Parliament. This body met in 1640, impeached Laud for high treason, and sent him to the Tower and kept him in confinement for three years. The House of Lords deferred judgment for a long time, but on Dec. 17, 1644, he was declared guilty of high treason.

LAUDANUM (la̤′dȧ-nŭm), the name applied to several tinctures of opium, containing about 33 grains of the soluble matter of opium, or 3.3 grains of morphine, to each fluid ounce of the tincture. Its strength is increased by exposure to evaporation, when it becomes quite thick. Laudanum is used to relieve pain, especially in cramps and diarrhoea, but should be taken only under the advice of a physician.

LAUGHING GAS (läf′ĭng), the name of a chemical used as an anaesthetic agent, so called from the feeling of merriment which it sometimes produces when it is inhaled. The agents used for this purpose consist mainly of hyponitrous oxide, or protoxide of nitrogen, and are administered by dentists, either to deaden pain or produce unconsciousness.

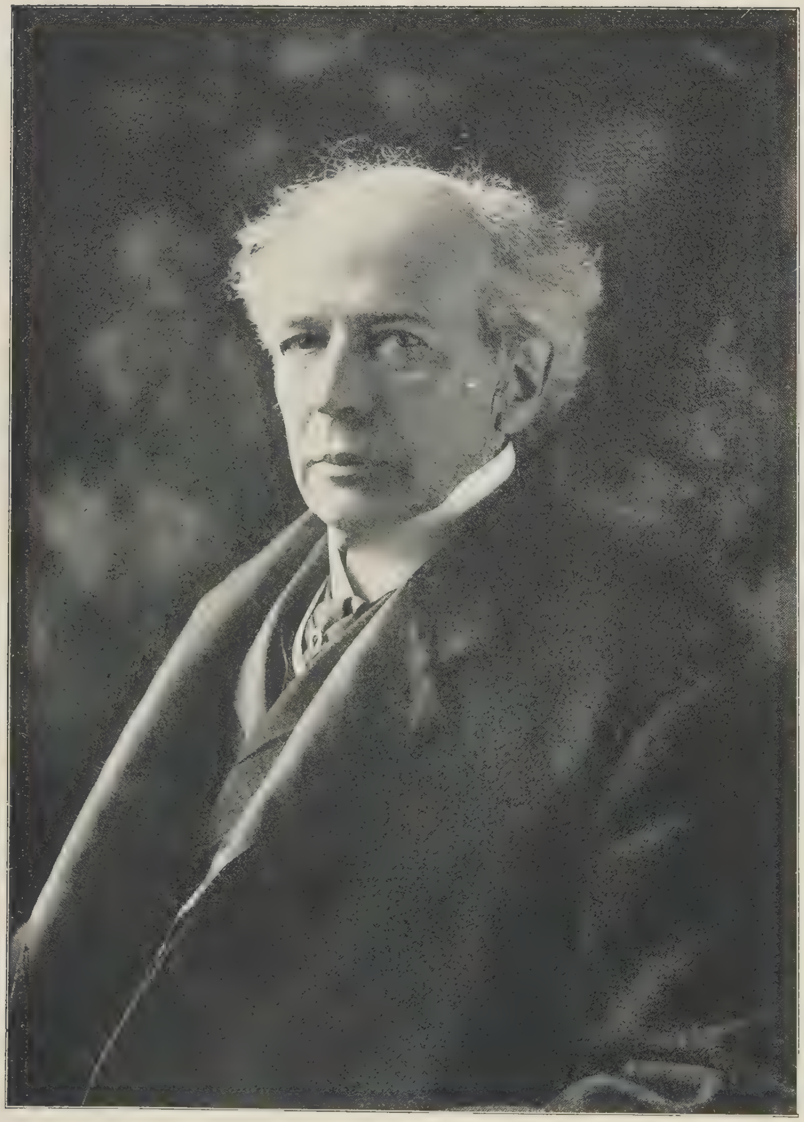
LAUGHING JACKASS. See **Kingfisher.**

LAUGHLIN (läf′lĭn), **James Laurence,** economist, born in Deerfield, Ohio, April 2, 1850. After attending the public schools, he studied at Harvard University, where he graduated in 1873. In 1878 he became instructor of political economy at Harvard, in 1890 was made professor at Cornell, and in 1892 was elected to the chair of political economy in the University of Chicago. He is noted as an advocate of the single monetary standard, and in 1895 discussed that proposition with W. H. Harvey, the author of "Coin's Financial School." His writings embrace "Elements of Political Economy," "History of Bimetallism in the United States," and "Facts About Money."

LAUGHTER (läf′tẽr), the expression of mirth, merriment, and satisfaction by laughing. It is a sound or succession of sounds produced by a deep inspiration, followed by vocalized expulsions of air in quick interrupted succession. Laughter is caused by things of an apparent or real ludicrous nature and by tickling. Sometimes it accompanies extreme grief and hysteria. Since there is an intimate connection between the muscles of the eyelids and some of the muscles of the upper lip, in laughing, as in weeping, the eyelids are more or less contracted.

LAUREATE (la̤′rē-ât), **Poet,** an honorary office maintained in England, in which the poet regarded official is invested with the title of *laureate* by the crown. The recognition of a poet laureate originated from various sovereigns who engaged singers. Among the early kings employing singers were Henry I., Richard I., Edward I., and Edward II. The term laureate itself arose from the laurel wreath given at the universities for marks of excellence in study and to men of notable poetic ability. Such a mark of distinction was bestowed by both English universities upon John Skelton, who afterward called himself *Poeta Laureatus.* Originally the title implied service, as the writing of an ode for the king's birthday and on festival occasions, particularly those celebrated after noted national victories. However, special duties have not been connected with the office subsequent to the reign of George III. The following have been poets laureate since the definite establishment of the office: Edmund Spenser, 1591-99; Samuel Daniel, 1599-1619; Ben Jonson, 1619-37; William Davenant, 1660-68; John Dryden, 1670-89; Thomas Shadwell, 1689-92; Nahum Tate, 1692-1715; Nicholas Rowe, 1715-18; Lawrence Eusden, 1718-30; Colly Cibber, 1730-57; William Whitehead, 1757-85; Thomas Warton, 1785-90; Henry James Pye, 1790-1813; Robert Southey, 1813-43; William Wordsworth, 1843-50; Alfred Tennyson, 1850-92; Alfred Austin, 1896-1913; Robert Bridges, 1913. It will be noted that interims occurred in 1637, 1668, and 1892.

LAUREL (la̤′rĕl), a genus of plants which range in size from a shrub to trees sixty feet in height. They are natives of Europe, Asia, and Africa, chiefly in the countries bordering on the Mediterranean, but have been acclimated extensively in different countries. Several species are cultivated as ornamental plants and for their fine aromatic fragrance. The leaves are lanceolate and evergreen, the flowers are yellowish-white, and the fruit is about an inch long and of a bluish-black color. The flavor of the leaves is utilized in culinary arts and as a stimulant and



(Opp. 1549) SIR WILFRID LAURIER.

carminative in medicine. Several oily substances are extracted from the leaves and the fruit, such as oil of sweet bay and oil of laurel. Laurel water is obtained by distillation from the leaves. In America the name is given to several native plants, including those known as the cherry laurel and purge laurel, but of the true laurel there is properly but one species. The true laurel and the noble laurel are somewhat similar in their evergreen foliage, but differ botanically. Wreaths and crowns were made of laurel twigs in ancient times by the Greeks, as a decoration for the heads of heroes.

LAUREL, a city of Jones County, Miss., 70 miles southeast of Jackson, on the Southern, the Illinois Central, and other railroads. It is in a farming section and has cotton mills, machine shops, and lumber mills. The features include the courthouse and federal building. It has a large trade. The place was settled and incorporated in 1890. Population, 1920, 13,037.

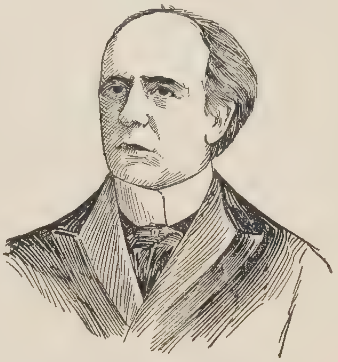
LAURENS (lạ'rĕns), **Henry,** statesman, born in Charleston, S. C., in 1724; died there Dec. 8, 1792. From 1777 until 1780 he was a delegate to the Continental Congress, serving as its president several years, and in 1779 was appointed minister to Holland. While on his way to Europe, he was captured by the British and confined for fifteen months as a prisoner in the Tower. He was appointed afterward as a peace commissioner with Jay and Franklin, and in 1782 signed the preliminary treaty of Paris by which peace was restored with England.

LAURENS (lō-rän'), **Jean Paul,** historical painter, born at Fourquevaux, France, March 28, 1838; died Mar. 23, 1921. He studied elementary courses in Toulouse and afterward took advanced work in Paris. In 1872 he was awarded a first class medal at the Salon, became an officer of the Legion of Honor in 1878, and was made a member of the Institute in 1891. He is considered among the best of modern historical painters. Among his chief works are "The Pool of Bethesda," "The Vengeance of Pope Urban VI," "Two Scenes from the Life of Saint Geneviève," "A Voice in the Desert," "The Death of Tiberius," "Excommunication of Robert the Pious," and "Release of the Prisoners."

LAURENS (lạ'rĕns), **John,** soldier and patriot, born in Charleston, S. C., in 1753; slain in battle, Aug. 27, 1782. He was the son of Henry Laurens, was educated in England, and in 1777 became an aid to Washington, serving with that general in all the battles of the Revolution in which the latter commanded. Washington dispatched him to France in 1781 for the purpose of obtaining aid in money and supplies, but he returned in time to participate in the Battle of Yorktown. While in active service under General Greene, in a battle on Combahee River, South Carolina, he was mortally wounded. His correspondence was published in Boston in 1867.

LAURENTIAN MOUNTAINS (lạ-rĕn'shĭ-ạn), the mountain range of British America that divides the Saint Lawrence basin from the watershed of Hudson Bay. These highlands separate the upper tributaries of the Mackenzie from the streams flowing into the same bay. It extends in an irregular curve from Labrador to the Arctic, a distance of about 3,000 miles. The highest peaks are 4,000 feet, the average height is 1,500, and the principal rock formations belong to the archaean system.

LAURIER (lō'rĭ-ȧ), **Sir Wilfrid,** statesman, born in Saint Lin, Quebec, Nov. 20, 1841. He was educated at L'Assomption College, received a degree from McGill University in 1864, and became queen's counsel in 1890. From 1871 until 1874 he served in the Quebec Assembly, then entered the Dominion Parliament, and in 1877 was made Minister of Inland Revenue. In 1891 he became leader of the Liberal party, was made Premier in 1896, and in 1898 secured an appointment on the Anglo-American joint high commission. His government having met the expectation of a large majority of the people, it was endorsed by a decisive vote in the election of 1908. His party was defeated in 1911, on the issue of reciprocity in trade with the United States, but he remained the opposition leader. In 1917 his party opposed compulsory military service, favoring voluntary enlistments instead, and was defeated. He died Feb. 17, 1919.



WILFRID LAURIER.

LAURIUM (lạ'rĭ-ŭm), a village of Upper Michigan, in Houghton County, fifteen miles northeast of Houghton. It is on the Mineral Range and the Copper Range railroads, and is surrounded by one of the richest copper-mining regions of North America. The industries consist chiefly of cigar factories, machine shops, and enterprises connected with the mining of copper. In the vicinity are several villages, including Red Jacket. The name formerly was Calumet, but it was changed to Laurium in 1895. Population, 1904, 7,653; in 1920, 6,696.

LAUSANNE (lō-zȧn'), a city in Switzerland, capital of the canton of Vaud, near the northern shore of Lake Geneva. It occupies a site about 500 feet above the level of the lake and is built mainly on the lower slopes of Mont Jorat. The chief buildings include a Gothic cathedral built in 1235, in which Farel and Calvin took part with others in famous disputations. It is the seat of a university, an academy for Protestant ministers, a school of agriculture, and several charitable institutions. The marufactures include tobacco, machinery, clothing, and jewelry. Lausanne is visited by many tourists during the summer, who find entertainment at numerous fine hotels. It is the seat of a bishopric, of the supreme court of the republic, and of the cantonal library with 125,000 volumes. The city was founded about the 6th century. Population, 1920, 64,446.

LAVA (lä′vȧ), a term generally applied to all molten matter thrown from volcanoes, whether flowing as a stream or being deposited after the movement has ceased. When moving in a molten state within the volcanic channel, it is properly called trap, and after being deposited it forms basalt, trachytic greenstone, or tufa, this depending upon the degree of rapidity with which it cools, the cooling action influencing the formation of hornblende, feldspar, augite, and various other substances. The stream cools and hardens more rapidly on the surface, which causes it to become honeycombed as a result of escaping gases from the interior, while the interior continues to flow in a liquid state for some time, but after the heat escapes it forms a compact mass. The lavas thrown out by Etna and in Labrador are largely feldspar, those of Vesuvius are principally green augite and basalt, and those of the Peak of Teneriffe consist chiefly of trachytic masses.

LAVAL (lȧ-vȧl′), a city of France, capital of the department of Mayenne, 45 miles east of Rennes. It has railroad and electric railway facilities and contains a cathedral which was begun in the 12th century. The manufactures include linen goods, leather, clothing, and marble products. It has a brisk trade in merchandise and cereals. Population, 1922, 32,563.

LAVAL-MONTMORENCY (lȧ-vȧl′-môn-mō-răn-sē′), **François Xavier de,** first Roman Catholic bishop of Canada, born in Laval, France, March 23, 1622; died in Quebec, May 26, 1708. He is known by his family title, Abbé de Montigny, which was applied to him more or less frequently both in America and Europe. He studied at the College of La Fleche, took a course in theology at Paris, and was ordained priest in 1646. In 1658 he was consecrated as Bishop of Quebec and the following year reached New France, where he organized parishes and vigorously prosecuted religious work. He consecrated the Church of Notre Dame in 1666, and about the same time established a preparatory college and a seminary for the education of priests. In 1675 he laid the foundation of the Seminary of the Holy Family and to this institution gave his property. He resigned the administration of his diocese in 1684, when he retired to the seminary he had established. His name is commemorated at Quebec in Laval University. He was a man of pure and devoted character, an upright advocate of the religious cause.

LAVAL UNIVERSITY, an institution of higher learning at Quebec, Canada. It was created in 1852 by the Quebec Seminary and granted a royal charter in December of the same year. By virtue of its royal charter, the Visitor of the Laval University is the Catholic Archbishop of Quebec, who has the right of veto over all the rules and nominations. The superior of the Quebec Seminary is *de jure* the rector, or principal, of the University. The council of the university is composed of the directors of the Quebec Seminary and of the three senior titular ordinary professors of each faculty. It maintains the four faculties of theology, law, arts, and medicine. The professors of the faculty of theology are named by the Visitor and all the others are named by the council, but they can be disposed at will. The degrees which the students may obtain are those of bachelor, master or licentiate, and doctor. Good conduct is an essential condition for obtaining degrees.

Laval University, in order to be ranked as a Catholic institution, was bound to be acknowledged and canonically erected by the Holy See. This solemn and final erection was granted by Pope Pius IX. in a bull dated in April, 1876. By virtue of this bull, the university has for its protector at the Holy See his eminence the cardinal prefect of the propaganda. The supreme direction of faith and morals is vested in a superior council composed of the most reverend and right reverend archbishops and bishops of the Province of Quebec, under the presidency of his grace the archbishop of Quebec, who is also apostolic chancellor of the university.

A decision of the propaganda, dated in February, 1876, authorized the establishment in Montreal of a branch of the Laval University, and it is affiliated by a system of seminaries throughout the Province of Quebec. The university has a library of 280,000 volumes. Instruction is given by a faculty of 120 instructors. The institution is attended by about 4000 students.

LAVATER (lä′vȧ-tĕr), **Johann Kaspar,** German author and physiognomist, born in Zurich, Switzerland, Nov. 15, 1741; died there, Jan. 2, 1801. He studied in his native city, where he became interested in literature by reading some of the writings of Klopstock. In 1762 he became widely known by opposing oppressive measures of government, and in 1767 published a volume of poems entitled "Swiss Songs." This was followed in 1773 by a religious work of three volumes known as "Prospects of Eternity," which went through a number of editions. As a preacher of the Protestant faith he took very high rank, being promoted to various charges until in 1786 he was called as minister to the Church of Saint Peter at Zurich. As a forceful pulpit orator and writer he was highly influential, his sermons and other writings receiving a wide reading, and as an advocate of religious liberty his influence spread throughout Germany and had a marked effect in the French Revolution. By a keen force of observation he established many principles of physiognomy, and was able to discriminate character with remarkable certainty. His work, entitled "Physiognomical Fragments," has been widely translated as an authoritative text on the subject. His death resulted from an injury received while attending wounded soldiers in a battle at Zurich, on Sept. 26, 1799, which caused him to suffer severely about fifteen months. One of his early precepts was, "Limit yourself at every moment, if you can, to what is nearest to you." Among his writings not named above are "Pontius Pilate" and "Aphorisms on Man."

LAVENDER (lăv'ĕn-dẽr), a genus of plants native to Southern Europe and Western Africa, but now widely naturalized and cultivated. They grow as shrubs from two to four feet tall, have hoary leaves and grayish-blue flowers, and are prized for their fragrant, volatile oil contained in the flowers and used in perfumery. The oil has a bitter principle, is of a pale yellow color, and is obtained by distilling the flowers with water. Besides its use in perfumery, oil of lavender is employed successfully as a stimulant in colic, hysteria, and other affections. Lavender water is a toilet preparation and is secured by dissolving oil of lavender with musk, cloves, attar of roses, bergamot, and other oils in spirits. The spirit of lavender is obtained by distilling fresh flowers in rectified spirits. A species of broad-leaved lavender yields an oil used in preparing varnishes and ornamenting porcelain products. The American perfume known as Florida water is prepared largely from lavender. Lavender is cultivated most largely in Europe, where it is used for the distillation of its essential oil and for marketing the flowers. Considerable quantities are grown in the United States, particularly in Pennsylvania, New Jersey, and the states of the Pacific coast.

LAVERAN (là-v'-rän'), **Charles Louis Alphonse,** physician, born in Paris, France, in 1845; died May 18, 1922. He studied at Paris and Strassburg and in 1873 became a professor at Val de Grâce. In 1878 he was sent to Africa to investigate malarial fevers then prevalent in Algeria, where he discovered the plasmodium which is the cause of malaria. For some time he was chief physician at the Lille Hospital and was made a member of the French Academy of Medicine. He published a number of works relating to the treatment of diseases.

LAVOISIER (là-vwä-zyå'), **Antoine Laurent,** noted chemist, born in Paris, France, Aug. 26, 1743; guillotined May 8, 1794. He became a specialist in chemistry, studying under Rouelle at Paris. In 1766 he was awarded a gold medal in a prize contest. He reported many masterly analyses of chemical compounds to the Academy. In 1768 he was made an associate of the Academy, was appointed to the position of farmer-general of taxes in 1769, and in 1776 announced several discoveries in relation to the manufacture of gunpowder. About that time he discovered the existence of oxygen, made notable progress in chemistry by the analysis of water, and led to the dissemination of knowledge of the composition of inorganic and organic substances. On May 2, 1794, he and other former tax collectors were accused before the convention, and the prejudice that existed against that class of former officers led to his guillotining. He is the author of many excellent works relating to chemistry and astronomy, the most celebrated being "Treatise of Elementary Chemistry," which was published in two volumes in 1789.

LAW, the collective body of regulations adopted by the government to regulate human conduct. The system of law which is enforced in a particular state or nation is known as its *municipal law,* while the system of rules acknowledged to be obligatory upon the nations is termed *international law.* Municipal law is divided into civil and criminal law. *Civil law* embraces all the provisions that regulate or protect the members of a community, except those that relate to the definition and provide for the punishment of public offenses, which constitute the code of *criminal law.* The acts of Congress and of the general assemblies, as defined by the decision of the courts, comprise the *written law,* while maxims and customs in use from time immemorial are known as the *common law.* Those portions of the law which are expressed in statutes and constitutions are denominated, respectively, *statute law* and *constitutional law. Administrative law* includes the regulations which limit and define the duties of the officials of the government and provide penalties for violations of the same. *Canon law* has reference to matters of ecclesiastical jurisdiction. The constitution of a nation is the supreme law of the land. To it are subject the constitutions of the various states and provinces, which are likewise limited by a constitution of their own. A law that is not in harmony with the constitution of the nation, or of the state or province in which it is enacted, is said to be *unconstitutional.*

LAW, John, financier, born in Edinburgh, Scotland, April 21, 1671; died in Venice, Italy, March 21, 1729. He was the son of a goldsmith. At the age of twenty years he went to London, but on account of a duel, in which his opponent was killed, he removed to Amsterdam. While there he studied the commercial and financial aspect of Europe, and in 1700 returned to Edinburgh, which was then in a state of excitement on account of the unsuccessful Darien expedition of 1695-1701. He immediately entered upon a plan to secure the adoption of paper currency by the Scottish Parliament, but failed. After traveling through Europe, he established a banking house in Paris as a result of successful gambling enterprises, and induced the Duke of Orange, regent of France, to adopt his system of paper currency in 1718, which circulated at par, although the bonds of the government were at a discount. The following year he inaugurated his celebrated Mississippi Scheme, an enterprise designed to develop the Mississippi valley. His immediate success caused him to attain much popularity, and he was made counselor of state and comptroller-general of finance. Later, however, his scheme collapsed, and he was compelled to flee from France, after which he became a common gambler and settled in Italy.

LAWN MOWER, a machine designed to cut grass in parks and on lawns. Many forms of this machine are sold on the market, designed to be pushed by hand or propelled by a gasoline engine or by horses. The principal part consists of a set of spiral knives with cutting edges, which revolve rapidly as the machine is moved along, cutting the grass as it comes between the cutting edges and a stationary knife. This machine is designed to cut only where the grass is short, hence is not serviceable in tall grasses.

LAWN TENNIS, a game of ball played on a ground, called the *court,* by either two or four persons. The balls used are of India rubber, a little less than three inches in diameter, and covered with white cloth. The requirements for the game are the balls, a net and posts, rackets, and a level surface of grass. Usually sides are chosen by a toss or spin of a racket, and the winner chooses the service or the preferable side. The server begins the game by striking the ball with his racket so that it passes over the net, which is hung across the court from the posts. The ball served must drop in the space which is diagonally opposite to him on the other side of the net, this being bounded by the net, the side line, the half-court line, and the service line. His adversary, called the striker-out, must return the ball before it touches the ground a second time, and the server must similarly return it. The ball must be passed back and forth in this way consecutively. When one player fails to do this he loses a stroke, which the adversary is deemed to win, and it is added to the score of the latter. The court should be 78 feet long and 27 feet wide for two players, or 36 feet wide for four players. Much skill and activity are required, hence the game is one of the many that furnish vigorous and healthful exercise. Several national and international lawn tennis associations are maintained, and contests in these and in local associations are quite numerous.

LAWRENCE (la̤ʹrẹns), a city in Kansas, county seat of Douglas County, on the Kansas River, 28 miles southwest of Leavenworth. It is on the Union Pacific and the Atchison, Topeka and Santa Fé railroads. The surrounding country is agricultural. It is noted as an educational center, having fine facilities for instruction. Among the noteworthy buildings are the county courthouse, the University of Kansas, the Haskell Institute, the high school, and the city hall. The manufactures embrace barb wire, cigars, candy, tile, furniture, earthenware, flour, shirts, paper, and machinery. The general facilities include a public library, public parks, pavements, and waterworks. It was settled in 1854, after the Kansas-Nebraska Bill was passed, and was a center of influence of the Antislavery party. Population, 1925, 12,341.

LAWRENCE, a city of Massachusetts, in Essex County, on the Merrimac River, 26 miles northwest of Boston. It is on several branches of the Boston and Maine Railroad and on many electric railways. The city has a public library of 50,000 volumes and is the seat of the Essex County Truant School. Other buildings of note include the townhall, the Lawrence Hospital, and many schools and churches. It has a large trade in merchandise, fruits, and cereals. The manufactures include boilers, furniture, car wheels, cotton and woolen goods, steam engines, boots and shoes, clothing, paper, hats, and machinery. Immense water power is obtained from the Merrimac, which has caused its manufacturing establishments to rank among the largest in the world. The vicinity was first settled in the latter part of the 17th century. Lawrence was formed in 1845 by uniting parts of Andover and Methuen. It was incorporated in 1853. Population, 1905, 69,939; in 1925, 93,527.

LAWRENCE, Abbott, merchant and philanthropist, born in Groton, Mass., Dec. 16, 1792; died in Boston, Aug. 18, 1855. In 1814 he formed a partnership with his brother Amos, the partnership being known as A. & A. Lawrence. The firm conducted a large domestic and foreign commission trade in cotton and woolen goods and accumulated a vast fortune. Abbott was elected to Congress in 1838, where he served in 1839-40, and in 1849-52 was United States minister to Great Britain under an appointment of President Taylor. He served on the commission that settled the northeast boundary in 1842 and as a commissioner to settle the fishery question. At Harvard University he established the Lawrence Scientific School by bequeathing $100,000 for that purpose, gave Harvard $50,000 for the erection of model lodging houses, and made liberal donations to the Lawrence Academy.

LAWRENCE, Amos, merchant and philanthropist, brother of Abbott Lawrence, born in Groton, Mass., April 22, 1786; died Dec. 31, 1852. He began his commercial career by clerking in a dry goods store, and in 1814 formed a mercantile partnership with his brother. The firm established a cotton mill at Lowell in 1831. It became highly successful in its foreign trade. Amos gave about $700,000 for charitable and educational purposes. His donations were to the Lawrence Academy, the Child's Infirmary at Boston, and $10,000 for the completion of the Bunker Hill Monument. Other donations were made to the Theological Seminary at Bangor, Kenyon and Williams colleges, and the Lawrence University in Wisconsin. His "Life and Correspondence" was published by his son in 1855.

LAWRENCE, Sir Henry Montgomery, soldier and statesman, born in Matura, Ceylon, June 28, 1806; died July 4, 1857. He joined the Bengal artillery stationed near Calcutta in 1823, took part in the Burmese War of 1828, the Afghan War of 1838, and the two Sikh wars in 1845 and 1848. In 1857 he was appointed by Lord Canning as commander at Lucknow and while there was wounded by a shell, from the effects of which he died. Lawrence was a military leader of much ability and likewise a philanthropist, having founded military asylums in Rajputana, Madras, and the Punjab. At Saint Paul's Cathedral is a statue in his honor.

LAWRENCE, James, naval officer, born in Burlington, N. J., Oct. 1, 1781; died June 5, 1813. He became lieutenant in 1802, distinguished himself in the war with Tripoli, and in 1811 became captain of the *Hornet*. In the engagement off the mouth of the Demerara River, British Guiana, in 1813, he sank the British brig-of-war *Peacock,* and for this service received the thanks of Congress. He commanded the frigate *Chesapeake* in an engagement with the British frigate *Shannon* near Boston, was mortally wounded, and when carried below exclaimed, "Don't give up the ship." A monument was erected to his honor in the churchyard of Trinity Church, New York City. Captain Lawrence evinced the utmost courage in naval engagements. He was dignified and commanding in appearance.

LAWRENCE, John Laird Mair, statesman, born at Richmond, England, March 24, 1811; died June 27, 1879. He studied at Haileybury College and in 1829 entered the civil service in India. In 1846 he was made chief commissioner of the Punjab, which enabled him to exercise a wide and favorable influence upon the Sikhs during the mutiny of 1857. His success in coöperating with Havelock and Clyde won for him the pupular name of the "Savior of India." In 1863 he was made Governor General, serving until 1868, and the following year was created Baron Lawrence. He was elected chairman of the school board of London in 1870.

LAWRENCE, Saint, celebrated martyr of the early church, probably born at Huasco, Spain, in the beginning of the 3d century, martyred Aug. 10, 258. He was a deacon of Rome under Sixtus I. in the 3d century. According to legend, he was summoned by the persecutors of Emperor Valerian before the praetor and a demand was made for him to deliver the church treasures. In response he brought forward the poor and sick, declaring them his treasures, and after persistent refusal to turn over the church valuables he was roasted on a gridiron. A church was built to his memory by Constantine the Great. August 10 is designated as his feast.

LAWRENCE, Sir Thomas, portrait painter, born in Bristol, England, May 4, 1769; died in London, Jan. 7, 1830. He began sketching in crayons at the age of ten years and became a student at the Royal Academy at eighteen. In 1791 he was elected an associate of the Academy and attained to full membership in 1798. The prince regent knighted him in 1815 and five years later he became president of the Royal Academy, succeeding Benjamin West. Besides painting the portraits of many prominent Englishmen, he was employed at Vienna and other European cities. "The Transfiguration" is his most noted work in crayon.

LAWRENCEBURG, county seat of Dearborn County, Indiana, on the Ohio River, eighty miles southeast of Indianapolis. It is on the Cleveland, Cincinnati, Chicago and Saint Louis and the Baltimore and Ohio railroads. The surrounding country is agricultural. It has a high school, a courthouse, and many fine churches. The manufactures include musical instruments, brick and tile, machinery, flour, furniture, coffins, and pumps. It was settled in 1817 and incorporated in 1847. Population, 1900, 4,326; in 1920, 3,464.

LAWTON, Henry Ware, soldier, born in Toledo, Ohio, March 17, 1843; killed at San Mateo, in the Philippines, Dec. 19, 1899. He entered the Union service in 1861 and served through the Civil War. He secured several promotions for gallant service and was granted a medal of honor for valuable aid at Atlanta in 1864. In 1865 he was brevetted colonel of volunteers, became second lieutenant the next year, and in 1888 was promoted to the rank of major. The following year he became lieutenant colonel and in 1898 served as brigadier general in the army of invasion sent to Cuba, taking a prominent part at the Battle of El Caney, after which he was made a colonel. In December, 1898, he was sent to the Philippines, where he captured Santa Cruz the following year, and had command of the lines in the province of Morong, chiefly about Manila. He was fatally wounded while making an attack upon intrenched Filipinos and was the first American general to fall in the war.

LAYARD (lā'ärd), **Sir Austen Henry,** traveler and diplomatist, born in Paris, France, March 5, 1817; died July 6, 1894. He descended from well-to-do parents, spent his early life in Italy, and studied law in Paris and London. In 1839 he started on an overland tour to Ceylon. He began excavations on the site of Nineveh in 1845, having secured a fund of $15,000 by vote of Parliament, and sent to the British Museum many relics of historic interest. About the same time he published "Ninevah and its Remains" and "Monuments of Ninevah." In 1852 he became a member of Parliament, was Undersecretary of Foreign Affairs in 1861-66, and was appointed ambassador to Madrid in 1869. Under Lord Beaconsfield he became ambassador to

Constantinople in 1887. Among the honors bestowed upon him are degrees from Oxford and Aberdeen universities. Later he was made honorary foreign secretary of the Royal Academy of France.

LAZARUS (lăz'ȧ-rŭs), meaning God has helped, the name given by Jesus to the beggar in the parable of the rich man and Lazarus (Luke xvi., 19-31). The name Lazarus was that of the brother of Mary and Martha, who was a friend of Jesus. It is related in John xi., 1-44, that Jesus raised him from the dead.

LAZZARONI (lăz-zȧ-rō'nĭ), a name applied to the fishermen and boatmen of Naples, Italy, but formerly used to designate all persons destitute of visible means of support. The name became connected with those occupying the hospital of Saint Lazarus, an institution of refuge. Formerly they included a large class who were prominent factors in the revolutionary movements of Naples, and under their leader conducted a prominent revolt against the Duke d'Arcos on July 7, 1647.

LEA (lē), **Henry Charles**, author, born in Philadelphia, Pa., Sept. 19, 1825; died Oct. 24, 1909. He entered the publishing house of his father at an early age, later became its principal, and in the meantime devoted much attention to literary research. During the Civil War he organized a system of municipal bounties to encourage enlisting in the Federal army. He donated $50,000 to the public library of Philadelphia and gave support to other institutions. His principal works include "Chapters from the Religious History of Spain," "Superstition and Force," "History of the Inquisition," "Essays on the Wager of Battle," "Indulgences in the Latin Church," and "Ordeal and Torture."

LEAD, a highly useful metal. It is bluish-white in color and possesses a brilliant luster when newly cut, but after exposure to the air becomes dull on account of taking on a coating of carbonate of lead. Lead possesses both ductility and malleability, but the former is less than that of all other ductile metals, while the later is considerable. It is flexible, soft, inelastic, melts at 615° Fahr., and has a specific gravity of 11.37. The lead of commerce is mostly obtained from the native lead sulphide, which occurs in veins. It is extracted from the native ore by roasting in a furnace with one-twentieth part of lime and allowing the free access of air. Lead occurs as a constituent of many minerals and in a native state is associated with others.

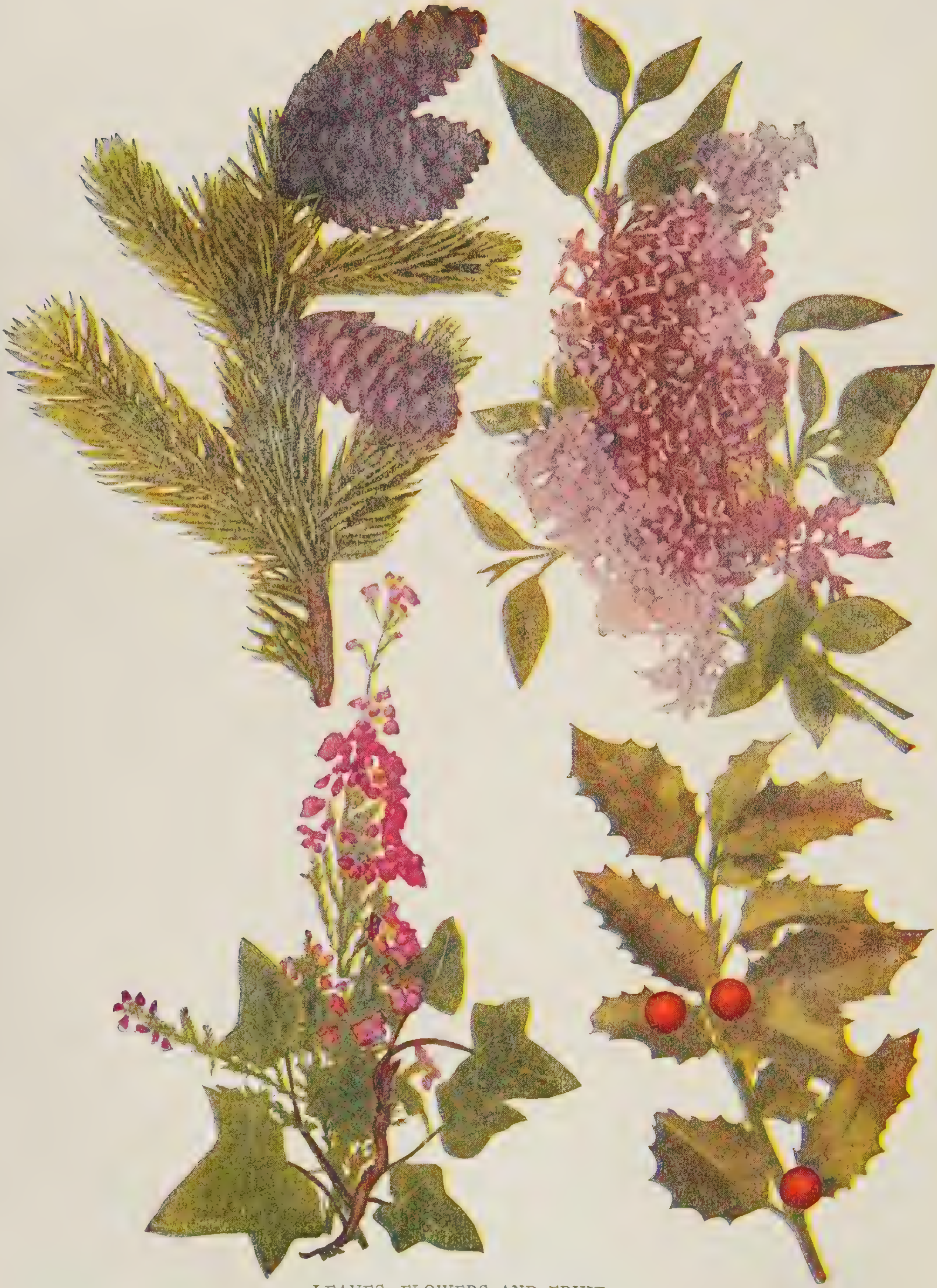
In separating lead from other metallic substances, the ore passes through several stages in heating and the sulphurous constituents are finally yielded up. If the lead still contains silver, copper, and antimony after the process of reduction, it is run off and repeatedly crystallized, a treatment under which the silver is concentrated. Antimony is the principal impurity and is burned off by a process of roasting in a reverberatory furnace. The lead of commerce is often nearly pure, and it can be obtained in a perfectly pure state by the reduction of the pure nitrate. Lead is used for type metal, plumber's solder, pewter, water pipes, gutters, and for forming various alloys. Owing to its being the softest of metals, it is rarely used in the pure state, except for special purposes. In manufacturing type metal it is alloyed with antimony. Pewter is a hard alloy, consisting of four parts of tin and one of lead. Tin is alloyed with lead in preparing solder, as well as in making brittania metal and various others.

Lead is obtained in North America to a large extent from the argentiferous ores, that is, from the ores bearing silver, and is produced largely in Missouri, Utah, Idaho, Montana, British Columbia, and Mexico. Extensive lead mines are worked in the Mississippi valley, where it occurs with deposits of zinc. The production of the United States aggregates annually 382,450 tons, which was the output in 1922, of which about one-fourth is exported. Lead is one of the most widely distributed of the metals and occurs in all the grand divisions, but the products of Europe are the most important aside from those of North America. Most commonly lead is found in galena ore. Carbonate and other salts of lead are unmetallic in appearance and occur in primitive and secondary rocks.

Lead has many oxides, such as *red oxide* and *plumbic oxide*, which serve useful purposes in the arts. *Litharge* is a protoxide and is produced by burning lead in a current of air. *Dioxide* or *brownoxide* is obtained by subjecting red lead to diluted nitrate acid or chlorine water. *White lead* is derived from carbonate of lead and is a basis for pottery glazes, cement, and white oil paint. *Carbonate of lead* and *salts of lead* are poisonous and give rise to so-called lead poisoning. That lead is one of the earliest known metals is evidenced by the fact that it is mentioned in the Books of Moses. It is spoken of by Pliny. Many of the articles made by the ancient Romans, Greeks, and Phoenicians still preserved in museums, such as rings, portions of pipes, and weights, contain lead or are made wholly of lead.

LEAD (lĕd), a city of Lawrence County, South Dakota, situated in the Black Hills, about three miles southwest of Deadwood. It is on the Chicago and Northwestern and the Chicago, Burlington and Quincy railroads. Extensive deposits of gold are worked in the vicinity. The chief buildings include the Hearst Library, the high school, the Recreation Building, the Homestake mines, and many schools and churches. It has manufactures of cigars, utensils, machinery, and jewelry. The municipal improvements include electric lighting and systems of sewerage and waterworks. Lead was settled in 1876 and was incorporated the following year. Population, 1905, 8,052; in 1925, 6,810.

LEAD POISONING, a disease due to the presence of a considerable amount of lead in



(Opp. 1555)

LEAVES, FLOWERS AND FRUIT.

Pine, showing needles and cones.

Lilac, showing leaves and flowers.

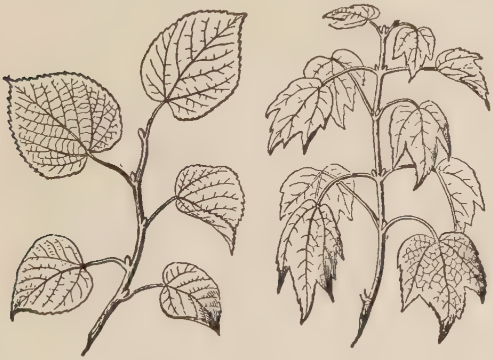
Ivy, showing leaves and flowers.

Holly, showing leaves and berries.

the system. The most common symptom of the disease is lead or painter's colic, which is attended by pain, constipation, and blue lines on the gums. All ailments due to lead poisoning are accompanied by a loss of color and a species of rheumatism. In the more severe cases the patient is affected by paralysis, delirium, and more or less severe convulsions. Opium is the chief medicine used, since it relieves the pain and overcomes the obstinate constipation of the disease. Sulphuric acid and cathartics are useful in the general treatment and iodide of potassium is given in chronic cases. Lead poisoning is caused by the use of lead pipes in conducting drinking water, by the application of cosmetics and hair dyes, and by frequent contact with white lead, as in the case of painters and employees of white lead factories.

LEADVILLE (lĕd′vĭl), a city of Colorado, county seat of Lake County, near the source of the Arkansas River, 78 miles southwest of Denver. It is on several surfaced highways and the Denver and Rio Grande and the Colorado and Southern railroads. The surrounding country is rich in silver and gold deposits. Among the chief buildings are the county courthouse, the Carnegie Library, the smelting furnaces, the high school, and a Federal fish hatchery. It has manufactures of ironware, machinery, cigars, and clothing. The site of the city is very beautiful and near it are many cañons and other natural formations of interest. Much has been done to improve the streets by grading and paving. Placer deposits of gold were discovered in California Gulch in 1860, but the rapid growth of the city began in 1877, when the rich silver mines were developed. It was incorporated in 1878. Population, 1900, 12,455; in 1920, 4,959.

LEAF, the organ of a plant that commonly grows from the axis or stem, but sometimes from the root. Leaves are flat, thin, and green in color and constitute the foliage. They never develop into flowers, but exhibit an endless variety of forms in different plants, and constitute marks by which to distinguish easily the different species. A complete leaf consists of a blade or limb, a leaf stalk or petiole, and a pair of stipules at the base. Many leaves have no stipules, and some have no petiole. In the latter case the leaf is said to be *sessile.* Simple leaves consist of one piece, while compound leaves have more than one piece or blade. The leaves are composed of two kinds of material, woody fiber and cellular tissue, the former being the framework that gives strength to the blade, and the latter being the green pulp of the leaf.



ARRANGEMENT OF LEAVES.
Alternate. Opposite.

The framework of leaves spreads in various directions and constitutes the ribs, from which branch veins and veinlets, these serving to convey the sap. One side of the leaf is turned upward to the sky and the other toward the ground, each being covered above and below with so-called surfaces or skins. The *stomates* or *pores* are on the lower surface and act as breathing organs to take in essential elements from the air, but the leaves also give out a purified air laden with oxygen, which serves a useful purpose in the maintenance of animal life. Plants of the same species have the same kind of leaves, and these are arranged in an exactly similar way on the stems, being an expansion of the bark and a node of the stem. The arrangement is either *opposite* or *alternate* on the stem, but it is greatly variegated in different species.

LEAF INSECTS, the name of numerous species of insects remarkable for their resemblance to the leaves of plants on which they feed. The similarity is not only in color, but also in size and in the resemblance of their legs to the ribs and veins of the leaves. Insects of this character are most numerous in tropical countries, occurring in South America, Australia, and portions of Africa. Their main protection against enemies consists in their resemblance to the leaf forms about them, since they are almost incapable of flight. In most species the male has wings and the female is wingless.

LEAGUE (lēg), a measure used for estimating length, both upon land and at sea. The nautical league is one-twentieth of a degree, or three equatorial miles, or 3.457875 statute miles. In England the land league is three statute miles. The French league has been used for different distances, as the legal post league, equal to 2.42 English miles, and the league of 25 to the degree, or 2.76 English miles.

LEAGUE OF NATIONS. See page 755, in last volume of these books.

LEANDER (lē-ăn′dẽr). See **Hero.**

LEAP YEAR, a year to which one day is added, being distinguished from others in that it contains 366 days. Every year exactly divisible by four is a leap year, except that only every fourth year ending a century is thus classed. This exception is made to correct the error arising from the addition of one day in four years to the year over the true length of the year. Thus 1800 and 1900 were not leap years, but 1200 and 1600 were and 2000 will be so classified. For a considerable time centuries divisible by 400 will be leap years.

LEATHER (lĕth'ẽr), the tanned, tawed, or otherwise dressed skin or hide of an animal. The process of tanning is applied to the skins of different animals for the purpose of making them tough and pliable and to prevent them from putrefying. Some sort of dressing was applied to the skins of animals very early in history, which was but the result of the practice of ancients in using skins for clothing and in the construction of tents, boats, and implements of war. The fact that the Egyptians developed much skill in the production of leather is evident from the remnants found among ruins, many of which appear to date about 1,000 years before the Christian era. That bark is serviceable for tanning was discovered, in all probability, by mere accident, but it has furnished the principal means and is still used quite extensively in many countries. Other processes are by tawing with bichromate of potash, alum, and various mineral salts, and by shamoying or treating the skins with oils.

Commercially *leather* is distinguished from *skin* and *pelt,* the former being the skin of an animal dressed with the hair or fur removed and the latter being untanned skin or hide. Leather is made most commonly from the skins of cattle, though those of swine, horses, asses, sheep, camels, and goats are utilized. When shipped from a long distance, hides reach the tannery in a cured or salted condition, but some, especially in cold seasons, are transported without curing. The first process is to unhair the skins, which is done by means of lime, or by a process of sweating. In the latter case a partial putrefaction takes place and the hairs are removed without injuring the hide. In some tanneries the skins are unhaired by sulphide of sodium, sulphide of arsenic, and other alkaline sulphides. The loosened hairs are removed by scraping, but machines for unhairing have been adopted in the larger tanneries. The next process is to remove the loose flesh by scraping and brushing, after which the hides are separated according to the class of leather desired. After soaking in water and washing out all particles of hairs, lime, and other matters, the skins are placed in a tan pit, in which a weak tanning solution is confined. In this they are turned several times daily and afterward are removed to pits containing stronger solutions, until they are placed in the final pit, where they remain for about six weeks. After this process they are taken out and beaten to give them hardness, when they are oiled and prepared for the market.

The various grades of leather are prepared differently, being pared, rolled, and then given smoothness by treatment, the smoothing being effected under a process of oiling. This is true of *japanned leather,* which, in the process of manufacture, is stretched on wooden frames and successive coats of varnish are applied, each of which is allowed to dry and then is rubbed down with pumice stone. *Russia, morocco,* and *seal leather* are other grades of highly finished products, but none of these has any connection with the locality or name applied, except as a recognized grade. The skins of lambs, kids, sheep, and goats are tawed and are used for light shoes and gloves. However, the grade known as *kid* is properly made from goatskins. A waterproof leather known as *cordovan* is obtained from horsehide. Shamoying is applied to shamois skins, being done by oil, but the so-called *shamoy* of the market is largely split leather.

Electricity was first applied in tanning in Sweden. Under the electric process hides may be completely tanned in from forty to ninety hours. The plan is to suspend hides in tanning liquor between two copper plates and apply an electro-motive force of fifty volts and a strength of one hundred amperes. However, the time required for the process depends upon the strength of the tan liquor, but it has been well established that sole leather cannot be prepared by rapid action for the reason that it requires a slow process to tan thick hides. Many more or less rapid tanning processes have been adopted, but the best results require considerable time.

LEATHER, Artificial, a manufactured material similar in appearance to leather, used extensively in the arts for purposes in which leather was formerly employed. This product has come into extensive use since 1849, when a product known as *leather cloth* began to be manufactured on a large scale in America. The introduction of this article is due to the scarcity of leather as compared to the demand. Many kinds of artificial leather are on the market at present and the uses for this product are very numerous, including the varieties used in the manufacture of furniture, books, and boots and shoes. One variety is made of the parings and shavings of leather, which are reduced to a pulp and afterward molded into various objects. *Keratol* is used extensively for binding books and in upholstering furniture and the seats in railway cars. Boots and shoes are made to some extent of what is known as *leather board,* which is made of hemp rope, manilla rope, jute, or linen canvas, to which are added leather straps, and it is treated with certain chemicals and a cement which makes it more impervious to water than leather. Vegetable leather is a product that consists largely of caoutchouc, the latter being reduced to a state of dissolution and spread over linen cloth.

LEATHERBACK, the name of a large turtle found in the ocean, so named because the back is incased by a leathery integument instead of a bony shell. Several species have been described, including both oceanic and fresh-water animals. Those found in the Atlantic Ocean range along the coast of the United States as far north as New York, and in Europe they extend southward from the English Channel. Some of the specimens have a length of from six to seven feet, the shell being a little more than four feet long. They weigh more than a ton at maturity. Their food consists chiefly of mollusks, fish, and crustaceans.

LEAVENWORTH (lĕv'ẹn-wûrth), a city in Kansas, county seat of Leavenworth County, on the Missouri River, 25 miles northwest of Kansas City. It is on the Union Pacific, the Chicago Great Western, the Missouri Pacific, the Atchison, Topeka and Santa Fe, and other railroads. The surrounding country has deposits of bituminous coal and is a rich farming district. Among the noteworthy buildings are the county courthouse, the Federal building, the Cathedral of the Immaculate Conception, the public library, and the public high school. It has the United States and State penitentiaries. The manufactures include glucose, furniture, wagons, engines, iron bridges, cigars, clothing, machinery, shoes, and earthenware. Near the city is the extensive military establishment of Fort Leavenworth, being immediately north of the city. The place was settled in 1854 and was incorporated the next year. Population, 1905, 31,857; in 1925, 20,889.

LEBANON (lĕb'á-nŭn), a city in Pennsylvania, county seat of Lebanon County, 26 miles east of Harrisburg. It is on the Pennsylvania Lines and the Philadelphia and Reading railroads, in a valley between the Blue and South mountains, and is surrounded by a rich coal and iron producing region. Among the chief buildings are the county courthouse, the city hall, the high school, and the public library. It has electric lights and street railways, pavements, and systems of waterworks and sewerage. The manufactures include machinery, engines, railway cars, organs, cordage, furniture, and farming implements. It was settled by Germans in 1700 and incorporated in 1820. Population, 1900, 17,628; in 1920, 24,643.

LEBANON MOUNTAINS, the name of two mountain ranges in the northern part of Palestine. They trend in almost parallel lines from northeast to southwest and inclose between them the Nahr Litany valley, anciently known as the Coele-Syria valley. The western range is called Lebanon and the eastern Anti-Lebanon, but the former is known in modern geography as Jebel-Libnan and the latter as Jebel-esh-Shurky. However, the western range is the more elevated, its highest peak being El-Kazib, which attains a height of 10,020 feet above sea level. The Anti-Lebanon range is comparatively irregular, but has the most elevated peak of the two ranges, Jebel-esh-Sheikh being 10,985 feet above sea level. Snow and ice remain in the higher ravines throughout the year, though the slopes are fertile. The cedar forests are famed in history, but they have been almost entirely removed by careless forestry. A number of streams penetrate the valleys, among them the Jordan River, which has its source in the Lebanon Mountains. A class of Christians called Maronites occupy the northern district, and in the southern portion are the Druses. The principal occupations of these peoples are the culture of silk, the vine, and the mulberry tree, and the rearing of sheep and goats. Considerable quantities of wheat, rye, barley, millet, and tobacco are cultivated. Eastern manufacturing enterprises receive growing attention. The most desirable land is possessed by the monks, who maintain Maronite monasteries, and are influencing the culture and manners of the region. Protestant missions are gaining a strong foothold.

LEBRUN (lẹ-brĕn'), **Charles,** historical painter, born in Paris, France, Feb. 24, 1619; died Feb. 12, 1690. He studied four years at Rome and, after being employed by Louis XIV. and other high officials, became first director of the Gobelin tapestry works, in 1662. His best productions include pictures of Alexander's battles and several fine decorations in Versailles. He belongs to the classical school of France, of which he is a very distinguished representative. His most noted work is entitled "Mary Washing the Feet of the Saviour in the House of Simon the Pharisee."

LEBRUN, Marie Anne Élizabeth, painter, born in Paris, France, April 16, 1755; died there March 30, 1842. She developed skill as a portrait painter at an early age, married J. B. P. Lebrun in 1775, and was made a member of the Academy in 1783. During the French Revolution of 1789 she traveled in Europe, visiting Russia, Germany, and Switzerland, and met many celebrated persons, a number of whom engaged her as a portrait painter. Among her productions are portraits of Marie Antoinette, George IV. of England, Lord Byron, Caroline Murat, Lady Hamilton, and Napoleon's sister. Several of her best pictures are now at the Louvre in Paris.

LECH (lĕk), a river of Germany and Austria. It joins the Danube after a course of 175 miles, at Donauwörth. The Lech is a rapid stream, falling 4,600 feet in its course. It is historical because of the battles in which Tilly defended the passage of this stream against Gustavus Adolphus, in one of which the former was slain.

LECKY (lĕk'ĭ), **William Edward Hartpole,** philosopher and historian, born near Dublin, Ireland, March 26, 1838; died Oct. 22, 1903. He graduated at Trinity College, Dublin, in 1859, and two years later published "Leaders of Opinion in Ireland," which has been republished a number of times. Soon after he began to devote himself to historical research. For a number of years he represented the University of Dublin in Parliament, where, in 1886, he declared his opposition to the Gladstone Home Rule policy for Ireland. His writings include "History of the Rise and Influence of the Spiritual Rationalism in Europe," "History of European Morals," "History of Ireland in the 18th Century," "History of England in the 18th Century," "Democracy and Liberty," and "Political Value of History."

LECLAIRE (lẹ-klâr'), **Edné-Jean,** political economist, born at Aisy-sur-Armancon, France, May 14, 1801; died July 13, 1872. His early education was limited, because he was confined to work on a farm until he was seventeen years of age, when he learned the trade of a mason, and shortly after went to Paris to engage as a house painter. By careful devotion to his work he soon acquired a lucrative business, employing a large number of workmen, and after carefully studying economic questions adopted the coöperative system of labor. The success attending his enterprises attracted wide attention, and it may be said that to him is due in a large measure the profit-sharing system as applied to the various industries of many manufacturing countries.

LECOMPTON CONSTITUTION, the name of a constitution adopted by the proslavery party of Kansas in a convention held at Lecompton on Sept. 5, 1857. It declared the legality of slavery in Kansas and prohibited the passage of emancipation laws by the Legislature. The entire constitution was not submitted to the people of the territory, but they were to vote only for the constitution with or without slavery. In the election the free-state settlers abstained from voting. hence the result was a large majority in favor of the proslavery party. Later the territorial Legislature ordered a vote on the constitution as a whole, when it was voted down by a large majority, and in 1859 an antislavery constitution was adopted.

LE CONTE (lê kŏnt'), **Joseph,** geologist, brother of Lewis Le Conte, born in Liberty County, Georgia, Feb. 26, 1823; died July 6, 1901. He graduated at Franklin College, received a degree in medicine at the College of Physicians and Surgeons in New York, and in 1851 accompanied Louis Agassiz on his exploring expedition to Florida. He became professor of natural sciences in Oglethorpe College in 1852, taught chemistry and geology in South Carolina College, and subsequently became professor of natural history and geology in the University of California. He published a number of works on religion and natural sciences, including "Compend of Geology," "The Religion of Science," and "Evolution: Its Nature, Its Evidences, and Its Relation to Religious Thought."

LE CONTE, Lewis, naturalist and traveler, born near Shrewsbury, N. J., Aug. 4, 1782; died Jan. 9, 1838. He studied at Columbia College, took a course in medicine, and, after settling in Georgia, became especially interested in botany. His son, John Le Conte, a celebrated physicist, was born in Georgia, Dec. 4, 1818, and died in California, April 29, 1891. After graduating at Franklin College, he studied medicine in New York. Subsequently he became professor at Franklin College and later held a like position in the University of California, of which he was afterward made president in 1875. He published "Study of Physical Sciences," "Physics of Meteorology," "Nebular Hypothesis," and "Sound-Shadows in Water."

LECONTE DE LISLE (lẹ-kônt' dẹ lêl'), **Charles Marie,** French poet, born on the island of Réunion, in the Indian Ocean, Oct. 23, 1818; died July 17, 1894. He received a liberal education and located in Paris, France, where he engaged in literary work. His remarkable ability to touch upon the things of nature and bring them into active play upon the finer emotions of the soul makes his productions among the most excellent of French writers. His writings have endured and still attract the sympathy of a growing circle of readers. Many objects furnished themes for his poems. He engaged extensively in making translations from the Oriental and Greek languages. His translations include the "Iliad," the "Odyssey," and the works of Aeschylus, Horace, Sophocles, Theocritus, Hesiod, and Euripides.

LEDYARD (lĕd'yẽrd), **John,** traveler, born in Groton, Conn., in 1751; died in Cairo, Egypt, Jan. 17, 1788. After studying law, he became a student at Dartmouth College with the view of undertaking Indian missionary work, but soon after enlisted in the British army, for which purpose he went as a sailor to Gibraltar, Spain. His roving disposition caused him to be discharged and he returned to America, but soon after went to England for the purpose of joining the third expedition of discovery organized by Captain Cook. In this expedition he was corporal of marines and was authorized by the English government to keep a complete diary of the voyage, which he published at Hartford, Conn., in 1787. In 1784 he entered upon a second tour, designing to explore the northwest coast of America, but, failing to secure necessary financial aid, he decided to make the trip from Europe. Accordingly, he reached Stockholm, Sweden, in 1786, and, after a vain attempt to cross the Gulf of Bothnia, proceeded to Saint Petersburg, where he engaged with a Russian expedition to explore Siberia. Among the points of interest visited are Barnaul in southern Siberia, Irkutsk, Lake Baikal, and Yakutsk on the Lena River. In 1788 he returned to Europe and furnished material for many interesting geographic and historic papers. Later he made a tour of Northern Africa, his death occurring while in Egypt.

LEE, Ann, founder of the Shakers, born in Manchester, England, Feb. 29, 1736; died at Watervliet, N. Y., Sept. 8, 1784. On June 1, 1742, she was privately baptized, later became a follower of the Prophetess Jane Wardlaw, and, after being converted, attained prominence in the Shaker Society. She began to preach in the streets of Manchester. Among her doctrines are those o₁ celibacy, that the second coming of Christ will be in the form of a woman, and that human beings may have constant intercourse with the world of spirits. The earnestness and force with which she preached attracted the attention of large crowds and she came to be called "Mother Ann." Her followers suffered from mob violence and she was imprisoned for obstructing the streets. After being released, she claimed that a vision had commanded her to emigrate to America, where the foundation of Christ's kingdom was to be established. Accordingly, she and eight of her disciples sailed for New York in 1774. She first proceeded to Albany, but soon after the society settled at Watervliet. By making tours through neighboring towns and New England, she secured a large number of converts. When the colonists began to move in favor of the Revolution, a number of the Shakers were arrested because of refusing to take the oath of allegiance, but this they did, not on account of sympathy for the British, but because of their opposition to war. See **Shakers.**

LEE, Arthur, diplomat, born at Stratford, Va., Dec. 20, 1740; died Dec. 12, 1792. He was educated in England and Scotland, where he attended the universities of Eaton and Edinburgh, and returned to America to practice medicine at Williamsburg, Va. In 1766 he went to England to study law and four years later was admitted to the bar. On returning to America, he published a number of pamphlets and articles to aid the colonies in their struggle against the British, and in 1774 presented the address of the Continental Congress to the King and people of England. The following year he was appointed to act as agent of a committee of secret correspondence with the friends of the colonies, but removed to Paris in 1776, where he aided Franklin and Silas Deane in securing a treaty of alliance with France. Later he was a commissioner to Spain and Germany. In 1780 he returned to America and the following year became a member of the Assembly in Virginia. Later he was a member of Congress and a commissioner to treat with the Indians.

LEE, Charles, American soldier, born in Dernhall, England, in 1731; died in Philadelphia, Pa., Oct. 2, 1782. He received a liberal education in England and in continental Europe, developed a desire for a military life by accompanying his father, Col. John Lee, and in 1751 received a lieutenant's commission and joined General Braddock in America. After the defeat of Braddock, he gave valuable support during the retreat, became captain of grenadiers, and in 1760 returned to England, where he joined Burgoyne in the Portuguese service. Later he served on the Polish staff, under appointment by the King of Poland, in 1769. In 1773 he returned to America, was appointed major general, and at the beginning of the Revolution sided with the colonists. He took part at the siege of Boston, began the fortifications of New York, and in 1776 defended Charleston against Sir Peter Parker. In the autumn of that year he occupied Northcastle, but disregarded Washington's order to join the main army, and was soon after captured by the British in New Jersey. His British captors at first treated him as a deserter, but Congress came to his rescue in holding as hostages six British officers and compelled them to treat him as a prisoner of war. In 1858 a document was found by which it became conclusive that Lee intrigued against Washington with the Howes, whereby the American army was to be overthrown. In May, 1778, he was exchanged for General Prescott, after which he was placed in command at Monmouth, and on account of disobedience and disrespect was court-martialed and suspended for a year. Later he wrote a disrespectful note to the president of Congress, because of which his commission was revoked, and he died in obscurity. In 1792 Edward Langworthy published the essays and papers left by him under the title "Memoirs of the Late Charles Lee."

LEE, Fitzhugh, American general, nephew of Robert E. Lee, born in Clermont, Va., Nov. 19, 1835; died April 28, 1905. He graduated at West Point, served against the Indians, and in 1860 became instructor of cavalry at West Point. The next year he joined the Confederate army and rose to the rank of major general. He was wounded at the Battle of Winchester, where three horses were shot from under him, and took part in the Virginia campaigns. In 1865 he surrendered to General Meade at Farmville. He was elected Governor of Virginia as a Democrat in 1886, serving four years in that office, and in 1895 was appointed United States consul general at Havana by President Cleveland. The duties of this position were discharged with much efficiency, especially during the trying period preceding the Spanish-American War. In 1898 he became major general of volunteers, and before the close of the year was appointed Governor General of the province of Havana by President McKinley. He has a high reputation as an American military leader and diplomat.

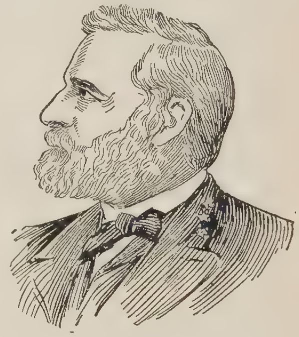
FITZHUGH LEE.

LEE, Francis Lightfoot, statesman, born at Stratford, Va., Oct. 14, 1734; died April 3, 1797. He was a son of Thomas Lee and a brother of Arthur Lee (q. v.). In 1765 he was elected a member of the House of Burgesses and for four years was a delegate in the Continental Congress, hence a signer of the Declaration of Independence. Later he took part in framing the Articles of Confederation, and throughout the Revolution was a friend and supporter of Washington. In 1779 he retired to private life.

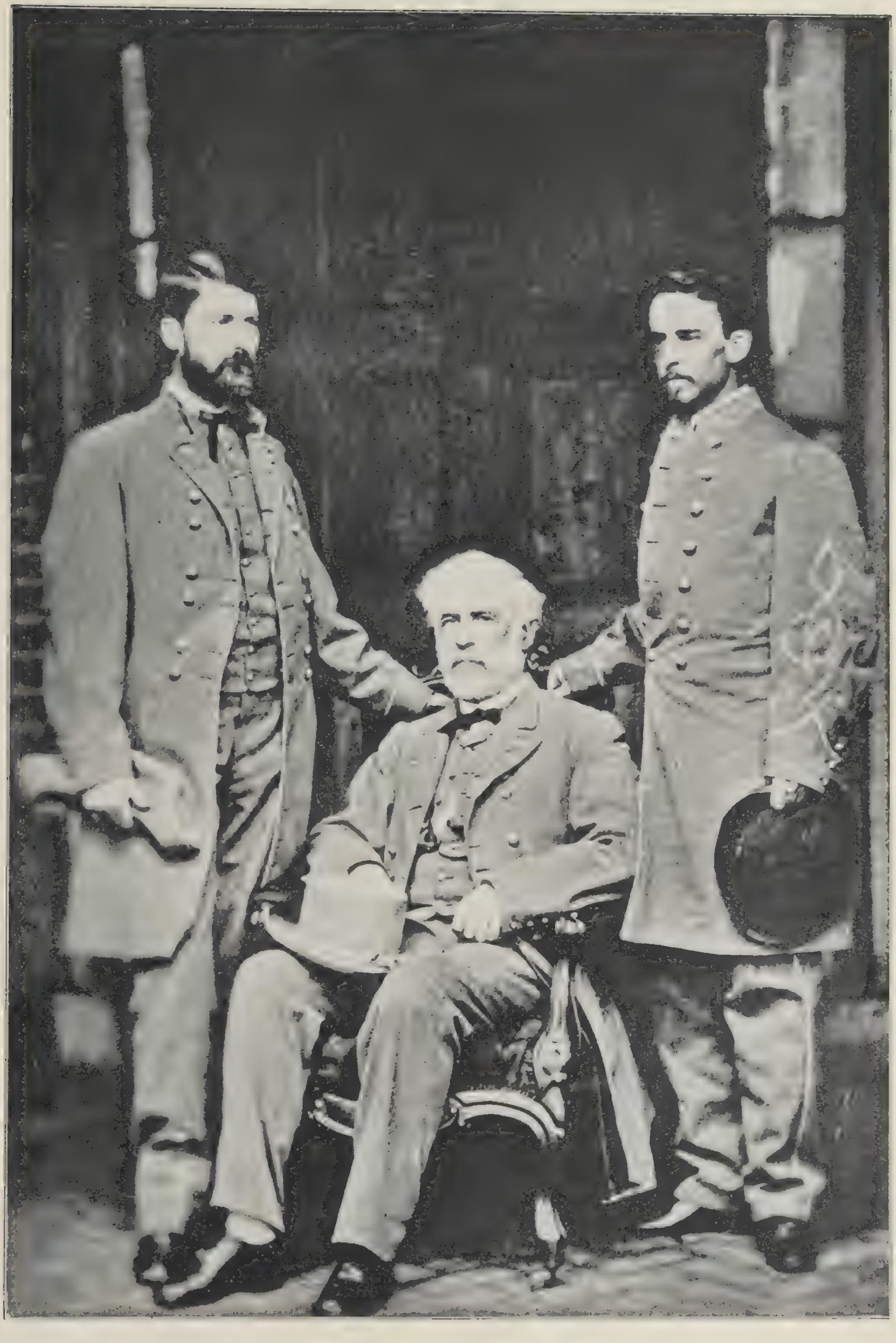
LEE, Henry, American soldier, born in Stratford, Va., Jan. 29, 1756; died in Cumberland Island, Georgia, March 25, 1818. He studied at Princeton College and was appointed captain of cavalry in 1776. Two years later he was made major of an independent corps and became known as "Light Horse Harry." His facility and accuracy of movement attracted the favorable attention of Washington, and in 1779 Congress awarded him a gold medal for capturing Paulus Hook. Lee was sent to assist Greene in the capture of Augusta, took part in the battles of Guilford Courthouse and Eutaw Springs, and in 1786 became a member of Congress from Virginia. In 1792 he was chosen Governor of Virginia, commanded the force sent by Washington for the suppression of the Whisky Insurrection in western Pennsylvania, and in 1799 was selected by Congress to pronounce the eulogy in relation to the life and character of Washington. In the resolutions drafted for the occasion he designated Washington as "First in war, first in peace, and first in the hearts of his countrymen." While at Baltimore, in 1814, a mob destroyed the office of the *Federal Republican* and, in seeking to counteract the destructive forces, Lee was seriously injured, from the effects of which he died four years later. He was the father of Gen. Robert E. Lee. His work, "Memoirs of the Wars of the Southern Department of the United States," is an interesting production.

LEE, Richard Henry, statesman and orator, born in Westmoreland County, Virginia, Jan. 20, 1732; died at Chantilly, Va., June 19, 1794. He studied in Virginia and England and, after spending some time in travel, settled in Virginia in 1752, where he came into possession of an estate left by his father. In 1757 he was elected as a delegate to the House of Burgesses, where he opposed slavery and proposed a scheme to discourage importation by levying high taxes. He was made collector under the Stamp Act in 1764, but soon after aroused public sentiment against this system of taxation by the British. Lee originated the idea of a colonial congress, advocating it as a protective means against the English policy. Accordingly, the first Continental Congress assembled in Philadelphia in 1774, of which he became a recognized leader. Besides delivering a number of able addresses in this body, he prepared an address to Great Britain as directed by Congress in 1775. In accordance with instructions from the Virginia House of Burgesses, he introduced resolutions on June 7, 1776, which declared "that these united colonies are, and of right ought to be, free and independent states, and that they are absolved from all allegiance to the British crown, and that all political connection between them and the state of Great Britain is, and ought to be, totally dissolved." He was a member of the Congress authorized by the Articles of Confederation, and as such opposed the adoption of the Constitution on the ground that it interfered with the power of the states, but accepted the office of Senator with the view of securing amendments. Later his prejudice against the Constitution was removed largely, and in all of his legislative activities he gave warm support to Washington. He retired from public service in 1792 with the good wishes and high esteem of his countrymen.

LEE, Robert Edward, American general, son of "Light Horse Harry," born in Stratford, Va., Jan. 19, 1807; died in Lexington, Va., Oct. 12, 1870. He entered the United States Military Academy in West Point at the age of eighteen, where he graduated with high standing in 1829. He married Mary Custis, daughter of G. W. P. Custis, the adopted son of George Washington, in 1832, and by the marriage came into possession of valuable estates on the Potomac and Pamunkey rivers. Subsequently he went on an extended tour of Europe. He was promoted to the rank of captain in 1838, and at the beginning of the Mexican War became chief engineer of the American army invading Mexico. Lee served with distinction at Cerro Gordo, Contreras, Cherubusco, and Chapultepec, but received a severe wound in the last named battle, and soon after was promoted to the rank of colonel. He superintended military studies at West Point in 1852-55, and remained in the service of the Union until April 17, 1861, when Virginia seceded and he became a general in the Confederate army. He operated in Virginia and South Carolina for a year as a subordinate general, but was made supreme in command on May 31, 1862, after J. E. Johnston had been wounded at Fair Oaks.


ROBERT E. LEE.

The history of Lee so far as it relates to the Civil War is that of the Army of Northern Virginia. In the Seven Days' battles he displayed extraordinary military tact, beat Pope at the second Battle of Bull Run, and immediately began his first invasion of the North, in the fall of 1862. The first invasion ended on the 17th of September, at the drawn Battle of Antietam, and Lee crossed the Potomac into Maryland for the purpose of threatening Washington, but in



(Opp. 1560)

MAJ.-GEN. G. W. C. LEE. GENERAL ROBERT EDWARD LEE. COL. WALTER TAYLOR.

moving up the Shenandoah valley into that of the Rappahannock he was intercepted by Burnside at Fredericksburg, where the latter was defeated. Lee likewise won a decided success over Hooker on May 2-4, 1863, at the Battle of Chancellorsville. He now resolved to invade Pennsylvania with all his available forces, but was met by Meade at Gettysburg, July 1-3, 1863, and was defeated, after which he recrossed the Potomac and fell back safely into Virginia.

In the spring of 1864 General Grant took the field against Lee. The first engagement between the two generals occurred at the Wilderness in May, and this was followed in rapid succession by the battles of Spottsylvania and Cold Harbor. These engagements were followed by continued maneuvers and confronts, but Lee gradually fell back to Petersburg and Richmond, after which the long sieges of those points began. By a desperate effort General Grant broke through the Confederate defenses on April 2, 1865, and Lee's army was compelled to evacuate Richmond. Soon after he made an attempt to join Johnston, but Grant's army being of superior number gradually hemmed the Confederate forces in close quarters. This resulted in the surrender at Appomattox, April 9, when the Civil War ended. In October, 1865, Lee became president of Washington College, now Washington and Lee University, which position he held until his death. General Lee was an able military commander, a man of noble character, and much revered and beloved. He edited "Memoirs of the Wars of the Southern Department of the United States."

LEECH, a class of suctorial worms found in bodies of water, marshes, and other moist places. Most of the many species inhabit sloughs and ponds of fresh water, but they are also found in marine waters. The group includes the common horse leeches, medicinal leeches, green leeches, and a number of other species. The body is composed of from 80 to 100 rings. Most species have a mouth furnished with toothed plates with which they make an incision for sucking blood from animals and many are parasitic on crustaceans and fishes. In Ceylon the land leeches live among damp foliage and are a common pest, attaching themselves to man and beast. In the colder climates the leeches hibernate during the winter by burying themselves in the mud at the bottom of pools and in marshy lands. The medicinal leeches formerly were used extensively for local extraction of blood in cases where the depletion of venous blood was thought advisable. These leeches are from two to four inches long, have a stomach with elongated pouches, and are capable of holding several times their weight in blood. When the stomach is filled, the leech has sufficient nutritious food for about a year, but may be made to disgorge the contents of the stomach by sprinkling salt on its body, when it is again ready for service. At present leeches are used only to a limited extent. They are employed principally in the southern part of Europe and the western part of Asia.

LEECH, John, artist and humorist, born in London, England, Aug. 29, 1817; died in Kensington, Oct. 29, 1864. He took lessons in sketching from his father, studied with Thackeray at Charter House, and began to publish designs when eighteen years of age. His first works were published as etchings and sketches by A. Pen, Esq., and consisted chiefly of representations of comic characters seen on the streets of London. His reputation rests largely upon the excellent drawings and sketches that appeared in *Punch,* his first contribution to that comic journal being made Aug. 7, 1841. The subjects of his sketches are designed to illustrate incidents of political life, fashions, popular follies, scientific tendencies, public gossip, and humorous incidents. Their preëminent fitness attracted world-wide attention. Many of the contributions to *Punch* were republished under the titles "Pencillings from Punch" and "Pictures of Life and Character." He furnished illustrations for Dickens's "Christmas Carol" and "Comic History of England," Hood's "Comic Annual," "Comic History of Rome" and various other publications.

LEECH LAKE, a lake of Minnesota, in Cass County. It is near the source of the Mississippi River, into which it discharges by a short outlet. The length is twenty miles and the breadth is fifteen miles. It is 1,296 feet above sea level.

LEEDS, a city of England, in Yorkshire, on the Aire River, twenty miles southwest of York. It is at the junction of several important railroads. Communication is furnished toward the west by the Leeds and Liverpool Canal, which was opened in 1816. The river is navigable to Leeds and adds materially to the transportation facilities. Among the noteworthy buildings are the Church of Saint Peter, Yorkshire College, the Leeds Infirmary, the public library, the royal exchange, and many schools and churches. About three miles distant are the remains of Kirkstall Abbey. It is noted for its manufactures of woolen goods, steel and iron products, boots and shoes, machinery, clothing, glass, cotton prints, earthenware, and tobacco. In the vicinity are rich deposits of iron ore. Many of the streets are finely paved and improved with grading and parkings. It has electric street railways and municipally owned waterworks and sewerage. The surrounding country produces large quantities of cereals, fruits, and vegetables. Leeds dates from the time of the Saxons, when it was an important place, and was incorporated in 1208. Population, 1921, 445,568.

LEEK, a biennial plant native to the southern part of Europe. It is related to the onion, but the bulb in the latter is replaced by a thickening at the base of the stem, which grows to a height of from ten inches to three feet. The leaves are about an inch wide, somewhat thick and fleshy, and grow in clusters near the surface. Gardeners bleach the lower part of the stem by earthing up, which has the effect of causing the edible part to enlarge. In flavor the leek is milder than the onion. Some species are grown as ornamental plants, and others furnish leaves that are used by the peasants for constructing the roofs of their cottages.

LEEWARD ISLANDS (lē′wẽrd), a group of the Lesser Antilles, situated north of the Windward Islands and southeast of Porto Rico. A part of the group is governed as the British colony known as the Leeward Islands. This portion has an area of 705 square miles. It includes the islands of Antigua, Saint Kitts, Nevis, Montserrat, Barbuda, Redonda, and Anguilla. Saint John, on Antigua, and Basseterre, on Saint Kitts, have good harbors and have a large trade. About four-fifth of the inhabitants are Negroes, 5,150 are whites, and the remainder are mulattoes. The principal religions are Anglican, Wesleyan, Roman Catholic and Moravian. Among the chief products are coffee, rum, sugar, tobacco, live stock, cocoa, and tropical fruits. Population, 1918, 133,046.

The islands of the Leeward group that do not belong to Great Britain include principally the following possessions: French—Marie, Galante, Guadeloupe, Désirade, and Saint Bartholomew; Dutch—Saint Eustatius and Saba; American—Saint Croix. The Virgin Islands belong to the United States and England and Saint Martin is a possession of the Dutch and French. Geographers now place the total area of the Leeward Islands at about 4,850 square miles. Guadeloupe is the largest and most important of these islands.

LEFEBVRE (lẹ-fȧv′r′), **François Joseph,** French soldier, born at Ruffach, in Alsace, Oct. 25, 1755; died in Paris, Sept. 14, 1820. In 1773 he joined the French army, rose by distinguished service to the rank of brigadier general in 1794, and was made a marshal by Napoleon at the establishment of the empire. At the siege of Dantzic he rendered efficient aid to Napoleon, for which he was given the title of Duke of Dantzic, in 1807. In the peninsular war he captured Bilboa, defeated the British in Spain in 1808, and took part with Napoleon in the Russian invasion. In 1814 he was in command of the left wing of Napoleon's army, resisting the advance of the allies, but when the Bourbons were restored he surrendered and was made a French peer.

LEFEBVRE, Jules Joseph, painter, born at Tournan, France, March 14, 1836. He was a pupil of Léon Cogniet. In 1861 he won the Prix de Rome by painting "Death of Priam." In 1878 he was awarded a medal of the first class at the Universal Exposition in Paris, and was made a member of the Academy of Fine Arts in 1891. Most of his works are portraits, in the painting of which he has had few equals. Among his chief paintings are "The Sleeping Maiden," "Slave Carrying Fruit," "Reclining Woman," "A Daughter of Eve," and "Nymph with the Infant Baachus." He died Feb. 24, 1912.

Leg, a limb or member of an animal, forming the lower extremity, used for support and locomotion. The larger animals have either two or four legs, and are called bipeds and quadrupeds respectively. Anatomists class the portion of the leg from the body to the knee as the thigh, which has one bone, and the part below the knee as the leg proper. The bone of the thigh is called *femur*. It is the largest and strongest bone of the body. At the hip it articulates with the hip bone by a ball and socket joint and at the knee with a hinge joint. The two bones below the knee are called the *tibia* and *fibula,* the former being the larger, but both are firmly attached by muscles. The calf of the leg is a muscular mass on the back of the human leg, below the knee, and furnishes ample means for standing and moving in an erect attitude.

LEGACY (lĕg′ȧ-cy̆), a gift of personal property or money conveyed by will and differing from a devise, which is understood to be a gift of real property. In the United States a legacy may be unconditional, or may be subject to some uncertain event or condition. The laws of the different states are somewhat varied, but in most instances the testator may bequeath in general or specific terms. He may name an executor and make bequests in favor of relatives, friends, or charitable and public institutions. In most countries a limited amount of property may be willed orally in the presence of witnesses, but when the legacy exceeds in value the common limit a written instrument is required. Creditors have a prior claim to legatees.

LE GALLIENNE (lẹ găl′lĭ-ĕn), **Richard,** author and journalist, born at Liverpool, England, Jan. 20, 1866. He was educated at Liverpool College and took up a business career, but after six years engaged in a literary pursuit. For some time he was literary critic of the *Star,* a publication in Liverpool, and subsequently joined the staff of the *Daily Chronicle.* In 1899 he published criticisms on the art and style of Rudyard Kipling. About the same time he made a lecture tour of Canada and the United States, and afterward took up his residence in New York City. His books include "The Religion of a Literary Man," "Travels in England," "The Quest of the Golden Girl," "The Beautiful Life of Rome," "English Poems," "Retrospective Views," and "An Old Country House."

LEGAL TENDER, the act of tendering payment at the time and place in full settlement of a claim, using such currency, or money, as the law authorizes a debtor to tender and requires a creditor to receive. The effect of a tender of payment does not discharge the debtor, but it saves the tenderer from paying interest thereafter and from the costs of a suit for the debt, but the exact amount due must be offered. It is not sufficient to offer to pay, but the money must be actually produced and made acceptable to the creditor. The provisions that regulate a legal tender differ materially in different countries. Notes of the Bank of England are a legal tender in Great Britain for any sum above £5. Although gold coins are a legal tender, they are such only when not diminished in weight below the statutory standard, and silver coins are not a legal tender to exceed forty shillings. Gold coins, certain treasury notes, and the so-called greenbacks are a legal tender for debts of any amount in the United States. Fractional silver money is a legal tender not to exceed ten dollars, but silver dollars are a full legal tender, unless it is otherwise stipulated in the contract.

LEGEND (lĕj'ĕnd), a term formerly applied to certain writings that were designed as lessons in the religious service of the primitive church. These writings contain biographies of saints and martyrs and stories of remarkable religious enterprises. They are intermingled with many valuable precepts, encouraging moral conduct and right living. The monastic institutions were prolific centers for the accumulation of these writings, at which it was not uncommon to read the histories of saints and martyrs on the particular days set apart for them. Most of these writings originated in the 12th century and spread alike among the Eastern and Western churches, serving the useful purpose of suppressing many of the writings of heathen origin. At present the term legend is understood to imply a narrative, usually entertaining, based on tradition with some intermixture of fact. Many of the popular readings are of legendary origin. They sprang up naturally among the different peoples and embody popular feeling in characteristic narrations.

LEGENDRE (lẹ-zhän'dr'), **Adrien Marie,** mathematician, born in Toulouse, France, in 1752; died in Paris, Jan. 10, 1833. He studied at the College Mazarin in Paris, became professor of mathematics in the military schools, and was honored by election to the Academy of Sciences in 1783. In 1787 he became a member of the Royal Society of London. He was employed in the latter year together with Méchain and Cassini to measure a degree of latitude between Dunkirk and Boulogne, while General Roy measured on the English side of the Channel, this being done to connect Paris and Greenwich. Subsequently Legendre took a leading part in introducing the decimal system into France. In 1816 he was appointed examiner of candidates for the Polytechnic School. He was not only recognized by his own government as a mathematician of great eminence, but those of other countries regarded him equally efficient and consulted him in regard to various mathematical propositions. He published "Treatise on Ellipses," "New Methods for the Determination of the Orbits of the Comets," "Elements of Geometry," and "Theory of Numbers." These works are authoritative, have been translated into many languages, and are still consulted in the higher institutions.

LEGERDEMAIN (lĕj-ẽr-dḗ-mān'), a deceptive performance that depends upon manual skill or dexterity. The different feats of legerdemain are performed by sleight of hand, collusion with assistants, mechanical contrivances, or some combination of these. They appear simple and uninteresting when they are understood. In giving exhibits of a high character it is common to utilize optical illusions, chemical properties, or some elaborate scientific phenomenon.

LEGHORN (lĕg'hôrn), a seaport on the Mediterranean, in the province of Tuscany, Italy, twelve miles southwest of Pisa. It has a safe and commodious harbor, important railroad connections, and modern municipal facilities. The streets are regular and most of the buildings are modern. It has manufactures of ships, machinery, clothing, hats, cheese, tobacco, salt, spirituous liquors, cotton and woolen goods, and oil. As a seaport it is one of the most important of Italy, both its import and export trade being extensive. Its importance dates from the 16th century. In 1835 a line of strong fortifications were constructed for its defense. Population, 1921, 99,812.

LEGION, The American, a patriotic and nonpolitical organization founded at Saint Louis, Mo., in 1919, by participants in the Great European War. The purposes include to uphold and defend the constitution of the United States, to promote peace and good will, and to sanctify the comradeship of the war by mutual helpfulness. Henry D. Lindsey of Texas was the first national commander. National encampments are held annually. It has about 800,000 members.

LEGION (lē'jŭn), a division of the army of ancient Rome, constituting at different times a body of men numbering from 2,000 to 6,000. When first organized, the legion comprised fifteen companies, each company containing sixty rank and file, two officers or centurions, and a standard bearer. Subsequently it was divided into ten cohorts, each cohort into three companies, and each company into two centuries. Romulus established the legion that contained 3,000 foot soldiers. At the time of the Second Punic War the legion numbered from 4,200 to 5,200, and from the year 100 B. C. to the downfall of the empire the number varied from 1,000 to 6,200. An eagle was the standard of the legion.

LEGION OF HONOR, a French order of merit established by Napoleon on May 19, 1802. It is maintained for the purpose of recognizing civil and military merit. Originally the decoration was a star bearing the portrait of Napoleon, surrounded by a wreath. On one side was the inscription "Napoleon Empereur des Francais," and on the opposite side it bore the French eagle, holding a thunderbolt and the inscription "Honneur et Patrie" in its talons. The constitution of the order has been remodeled at different times, but at present five ranks are recognized, those of grand crosses, grand officers, commanders, officers, and chevaliers or knights. By a constitutional provision the membership in each rank or class is limited to the following number: grand crosses to 70, grand officers to 200, commanders to 1,000, officers to 4,000, and chevaliers to 25,000. Membership is limited to those who have served in some military or civil capacity a term of 25 years, attained marked eminence in civil arts, or become noted for skill and bravery in war. The decoration now bears the inscription "Republique Francaise, 1870," while the opposite side has two flags and is inscribed "Honneur et Patrie" (Honor and Country). The president of France is the grand master of the order by virtue of his office.

LEGISLATURE (lĕj'ĭs-lā-tŭr), the lawmaking body of a state or country. It has the power to enact, amend, and repeal laws and resolutions and is subject to the constitution. The chief executive, whether in a republic or a monarchy, has more or less influence upon the legislature, and under certain restrictions may veto its enactments, though in most cases laws and resolutions may be passed over the veto of the chief executive. Originally, as in ancient Greece and Rome, the lawmaking functions were vested in assemblies that were constituted of a large number of the citizens, but later, as the countries became more populous, these powers were delegated to a few representatives chosen by the people. Later the legislative and executive functions were combined in the king or emperor, as in the Middle Ages, but ultimately the commons were granted enlarged powers, and at present all of the leading civilized nations have legislative assemblies constituted wholly or in part of representatives chosen by the popular vote of those entitled to the right of franchise.

In England the body having national legislative functions is known as the Parliament. It is constituted of the House of Lords and the House of Commons. In this respect it corresponds to the highest legislative authority in the Dominion of Canada and the Commonwealth of Australia. Members in the upper house hold their position by heredity or appointment, while those in the lower house are elected by the people. In the United States the national legislature consists of the two houses of Congress, the Senate and the House of Representatives. Members of the former are elected by the legislatures of the states, and those in the latter are chosen by popular vote in the several states. All of the civilized countries have national legislatures corresponding to those in Great Britain and the United States, and in most cases they are composed of two branches. In some countries, as in England, the members of the upper house serve for life, and in others, as in the United States, the term is for six years, and the incumbents may be reëlected any number of times. All of the subdivisions of a nation, such as states and provinces, have legislatures or assemblies for the purpose of enacting laws of a more local character. These likewise consist in most cases of an upper and a lower branch. In cities the legislative authority is vested in the common council, and in counties it is exercised by the board of supervisors or the county commissioners.

LEHIGH (lē'hī), a river of Pennsylvania, rises in Wayne County, and after a course of 120 miles flows into the Delaware River at Easton. The country through which it passes is rich in anthracite coal deposits. In its course the Lehigh passes the cities of Allentown, Mauch Chunk, and White Haven. About seventy miles of its length have been rendered navigable by extensive improvements.

LEHIGH UNIVERSITY. See **Bethlehem.**

LEIBNITZ (līp'nĭts), **Gottfried Wilhelm,** scholar and philosopher, born in Leipzig, Germany, July 1, 1646; died in Hanover, Nov. 14, 1716. His father was professor of law at Leipzig, where the younger Leibnitz studied in the Nicholas School. His natural talents were remarkable, and he showed extraordinary ability to acquire and adapt. He became interested in extensive reading at the age of eight years, being fond of the writings of Aristotle and Plato, and at twelve years was versed in Latin classics and began the study of Greek. At the age of fifteen he entered the University of Jena, where he studied for some time, and afterward took a course in law at the university in Altdorf, where he received a doctorate of law in 1666.

Although Leibnitz made a specialty of law, he showed profound interest in philosophy and literature, and by utilizing his father's library in research and making experiments he developed many original theories. At the time of securing his degree in law he prepared a thesis which brought an opportunity for him to engage as professor at Altdorf, but, instead, he chose the post of secretary and tutor in the family of the Baron von Boyneburg, with whom he remained until 1672, when he visited Paris. While there he presented a memorial to Louis XIV. in relation to the conquest of Egypt, which, according to general opinion, was the cause of Napoleon's expedition to that country in 1798. Shortly after he was elected a member of the Royal Society in London, formed the acquaintance of Boyle and Newton, and in 1676 was appointed to the office of councilor and librarian of Hanover by the Duke of Brunswick. In 1687 he went to Vienna and visited Italy, and in 1700 became president of the Royal Academy of Sciences at Berlin. Subsequently he was accorded distinguished honors by Peter the Great of Russia.

Besides writing extensively on mathematics and philosophy, he gave attention to religious subjects, proposing first to unite the Roman

Catholic and Protestant churches, and later the Lutheran and Reformed churches of Prussia. In both of these he failed. Subsequently he engaged in an extended controversy with Newton regarding the differential calculus. His publications embrace "History of the House of Brunswick-Luluberg," "Monadologie," "System of Theology," and "General Philosophy." His philosophical system embraces four theories of importance: the theories relating to the preëstablished harmony, the doctrine as to the origin of ideas, the theory of monads, and the doctrine of optimism.

LEICESTER (lĕs'tẽr), a commercial and manufacturing city of England, in Leicestershire, on the Soar River, 98 miles northwest of London. It is the focus of several important railroads. The chief buildings include the free library, the Royal Theater, the public museum, the Trinity Hospital, and many schools and churches. It has manufactures of ironware, boots and shoes, woolen and cotton goods, thread, lace, utensils, and earthenware. The surrounding country is fertile and produces cereals, vegetables, dairy products, and wool. It is reputed that the city was founded by King Lear. Many relics of remote centuries have been found in its vicinity. It received the first charter from King John. The building of railroads and the growth of manufacturing establishments are the causes of its modern prosperity. Population, 1921, 227,242.

LEICESTER, Robert Dudley, Earl of, son of John Dudley, Duke of Northumberland, born in 1532; died Sept. 4, 1588. His father, John Dudley, Duke of Northumberland, was executed for his intrigues in contriving a marriage between Guilford Dudley and Lady Jane Grey and in endeavoring to secure the throne for her. Young Leicester was himself placed under arrest, but afterward was liberated by Queen Mary. Queen Elizabeth made him Earl of Leicester and elevated him to various offices. He married Amy Robsart, daughter of Sir John Robsart of Devonshire, in 1549, but the union proved unfortunate. His wife settled at the house of Anthony Forster in 1560, where she was murdered. Several circumstances connected him with the deed, but Queen Elizabeth still continued to bestow marked favors upon him, and in 1575 paid him a visit at Kenilworth. The reception and entertainment accorded the queen at that place forms the basis of Sir Walter Scott's novel known as "Kenilworth." It was popularly believed that the two would form a marriage union, and, when Leicester married the Countess of Essex in 1578, Elizabeth was offended. In the expedition of 1585 into the Netherlands Leicester held an important command, but was recalled two years later on account of several acts showing his incapacity. However, Queen Elizabeth appointed him lieutenant general in 1588, when England was called upon to make defense against the Spanish Armada. It is thought that his sudden death resulted from poisoning by accidentally taking a potion intended for his wife.

LEIDY (lī'dĭ), **Joseph,** naturalist and author, born in Philadelphia, Pa., Sept. 9, 1823; died April 30, 1891. In 1844 he graduated from the University of Pennsylvania, was retained as professor of anatomy in the same institution, and in 1846 secured a like position in the Franklin Medical College. Subsequently he taught in Swarthmore College, and for a long time held a professorship in the University of Pennsylvania. He received many distinguished honors by elections to scientific and learned societies, and was granted the prize of $1,000 from the Boston Society of Natural History. His publications embrace "The Extinct Sloth Tribe of North America," "The Extinct Species of the American Ox," "The Ancient Fauna of Nebraska," "Tapeworm in Birds," "Cretaceous Reptiles," "On the Fossil Horse," and "Elementary Text-Book of Human Anatomy."

LEIF ERICSSON, noted Norse discoverer, born in Iceland about 970; died about 1020. He was a son of Eric the Red (q. v.). King Olaf Trygvason sent him on an expedition to introduce Christianity into Greenland, and later he landed on the northeastern coast of North America, in 1001. It is thought he cruised along the coast of Newfoundland and Nova Scotia, and that he sailed southward to New England.

LEIGHTON (lā'tŭn), **Frederick, Baron,** artist, born in Scarborough, England, Dec. 3, 1830; died in London, Jan. 25, 1896. He studied chiefly in Rome and later in Berlin and Florence, having previously acquired a general education at Frankfort-on-the-Main, Germany. His ability as a painter developed from natural aptitude as well as studious application, and as early as 1849 he produced at Brussels several excellent specimens of art. In 1855 he exhibited his "Cimabue's Madonna" at the English Royal Academy, which attracted such general attention that Queen Victoria purchased it. Later, in 1878, he became president of the Royal Academy, was knighted, and in 1886 was made a baronet. His principal paintings include "The Star of Bethlehem," "Orpheus and Eurydice," "Girl Feeding Peacocks," "Hercules Wrestling with Death," and "Triumph of Music." He produced several valuable sculptures, among them his "Sluggard" and his "Athlete Strangling a Python."

LEIGHTON, Robert, prelate, son of Alexander Leighton, born in Edinburgh, Scotland, in 1611; died June 26, 1684. His father was persecuted by Laud for opposing the spread of the Episcopal faith in Scotland, but this did not deter Robert from becoming a devoted adherent and advocate of the Presbyterian Church. He studied at the University of Edinburgh, and in 1641 was ordained a minister of the Presbyterian Church at Newbattle. Ten years later he became principal of the Edinburgh University, remaining nine years, when he accepted the offer of a Scotch bishopric at Dunblane made by Charles II. In this capacity he labored unsuccessfully to conciliate the two religious faiths, and in 1674 resigned and retired to London, England, where he died.

LEIPSIC (līp'sĭk), or **Leipzig,** a commercial city of Germany, in a fertile region of Saxony, on the Elster, 73 miles northwest of Dresden. Many railroad and electric railway lines converge here. It has well-paved streets, extensive parks, modern municipal facilities, and many historic buildings and churches. The old portion of the city has narrow streets, but those of the newer part are entirely modern. The townhall, a large building in the Renaissance style, dates from 1556. Other noteworthy buildings include the stock exchange, the market house, the Imperial courthouse, the Church of Saint John, the public library, the Church of Saint Thomas, and the University or Pauline Church. It has a large museum, several theaters, a castle, and many memorials and statues. Among the monuments is a fine work of art dedicated to scenes in several wars, erected in 1888. The manufactures embrace machinery, cotton and woolen goods, musical instruments, spirituous liquors, ribbon, earthenware, leather, paper, clothing, and ships.

Educationally Leipsic is one of the most important cities of the world, containing a fine public school system, several gymnasia, conservatories of music, business colleges, industrial schools, and the celebrated University of Leipsic. This great educational center was founded in 1408, represents property of much value, and is efficiently equipped with courses of study and apparatus. It has 300 professors, 4,000 students, and a library of 500,000 volumes. The city of Leipsic dates from the 11th century, when it was founded by the Wendish. It has been the seat of many historic conventions and battles. In the Reformation it suffered intensely, was besieged and taken five different times, and near it, at Breitenfield, occurred the victory over Tilly by Gustavus Adolphus on Sept. 17, 1631. The so-called "Battle of Nations" occurred here on Oct. 16-19, 1813, between the allied forces of Prussia, Austria, Sweden, and Russia and Napoleon, in which the French were defeated and a step toward Napoleon's final overthrow was accomplished. In this battle Napoleon had an army of 180,000 men, while the allied forces numbered about 300,000. The annual jobbing trade of Leipsic is at present estimated at $60,000,000. Population, 1920, 587,635.

LEIPSIC, Battles of. See **Leipsic.**

LEITH (lēth), a seaport of Scotland, on the Firth of Forth, a short distance north of Edinburgh. It has an important harbor, is connected by several railroads with other commercial centers, and engages extensively in the manufacture of sugar, engines, machinery, spirituous liquors, fabrics, cordage, and ships. In 1128 it was known as Inverleith. Robert I. granted the city, port, and mills of Leith to Edinburgh in 1329. As an export and import city Leith is of growing importance, its trade in coal being particularly extensive. Population, 1921, 80,489.

LEITNER (līt'nẽr), **Gottlieb Wilhelm,** author and traveler, born of German parents in Budapest, Hungary, Oct. 17, 1830; died in Bonn, Germany, March 24, 1899. His father was a physician and, being involved in the revolution of 1839, went to Turkey, where Gottleib acquired proficiency in modern Greek, Arabic, and Turkish. Subsequently he studied the French, Italian, and English languages at Malta, and afterward took a course at King's College in London, where he was chosen teacher of Arabic in 1859. He became director of the college at Lahore in the Punjab in 1864, and while there established many scientific societies, libraries, schools, and periodicals. In the meantime he explored Tibet, Kashmir, Ladakh, and Dardistan. His explorations resulted in valuable additions to knowledge of Sanskrit and other ancient subjects of interest. He published "Philosophical Grammar of Arabic," "Races of Turkey," "Comparative Grammar of Dardu," "History, Songs, and Legends of Dardistan," "Education in the Punjab," and "Theory and Practice of Education."

LELAND (lē'land), **Charles Godfrey,** author, born in Philadelphia, Pa., Aug. 15, 1824; died March 20, 1903. He graduated from Princeton College in 1847 and resided in Europe two years, studying at Heidelberg, Munich, and Paris. Subsequently he became acquainted with the language of the Gypsies by living with them in various countries. He returned to America in 1848, was admitted to the bar, but devoted his time to literary research and study. In 1869 he again went to Europe, where he remained eleven years, and on his return to America devoted his attention to introducing manual teaching in the public schools of Philadelphia. His publications include "Hans Breitmann's Ballads," "Legends of Birds," "English Gypsies and Their Language," "Meister Karl's Sketch-Book," "Poetry and Mystery of Dreams," and "Algonquin Legends."

LELAND STANFORD JUNIOR UNIVERSITY, an educational institution at Palo Alto, Santa Clara County, California, 33 miles from San Francisco and 15 miles from San Jose, the county seat. It was founded in 1885 by Leland Stanford (1824-93) and Jane Lathrop Stanford (1825-1905), his wife, as a memorial to their only son Leland, who died in 1884 at Florence, Italy, in his fifteenth year. The corner-stone of the main building was laid in 1887 and the institution was opened for instruction in October, 1891, when it had 559 students and a faculty of 35 teachers. This attendance grew to 4,170 students in 1926, when the faculty included 438 instructors.

The university campus, containing 9,000 acres, the country estate of Senator Stanford, is beautifully situated at the foothills of the Santa Cruz Mountains, with the sweep of the Santa Clara valley and the Bay of San Francisco in front of it and the Mount Hamilton range beyond. The plan of the buildings was adopted from the architecture of the old Spanish missions of California. An inner quadrangle of twelve one-storied buildings of buff sandstone with red tiled roofs and connected by an arcade of columns and arches opens on a paved court of four acres. diversified with beds of tropical plants. It is surrounded by a second quadrangle of fourteen buildings, most of them of two stories, flanked by another arcade of columns and arches. Some of the buildings were damaged by the earthquake of 1906, but they were restored at once. In addition to the Palo Alto estate, the university has a landed endowment of 75,000 acres of fruit and farming land. However, the principal endowment consists in interest-bearing securities which aggregate $25,257,625. The university library has 410,000 volumes and is rapidly increasing.

A board of trustees of fifteen members, elected for terms of ten years, has general management. Academic matters are dealt with by the academic council, comprising the professors and associate and assistant professors. The departments include those of ancient and modern languages, law, economics and social science, engineering, history, botany, education, zoölogy, philosophy, geology and mining, applied mathematics, etc. The Hopkins Marine Station at Pacific Grove, California, is affiliated with the university. Honorary degrees are not granted. The degrees include those of Engineer, Bachelor of Laws, Bachelor of Arts, and Doctor of Philosophy. The full course requires 180 quarter units of university work, 45 quarter units being an average year. David Starr Jordan, formerly president of the University of Indiana, was elected the first president. Ray Lyman Wilbur has been president of the university since 1916.

LELY (lē′lĭ), **Sir Peter,** eminent painter, born in Westphalia, Germany, in 1618; died in London, England, in 1680. He studied painting at Haarlem under Peter Grebber, commenced painting landscapes and portraits, and in 1641 settled at London. Charles I. and Cromwell engaged him to paint portraits, while Charles II. made him court painter and knighted him. Lely possessed remarkable facility of execution, was a careful student of outlines, and became the most distinguished portrait painter of his time in England. At Hampton Court is a collection, known as beauties of the court of Charles II., in which many of his finest productions are preserved.

LEMAN, Lake, a name frequently applied to Geneva Lake. See **Geneva, Lake of.**

LE MANS (lẹ-mön̤′), a city of France, capital of the department of Sarthe, 132 miles southwest of Paris. It is well located on both sides of the Sarthe River, which is crossed by several bridges. Among the features are systems of sewerage and waterworks, paved streets, electric street railways, and numerous churches. The most noteworthy public building is the Saint Julian Cathedral. It has an important trade in farm produce and poultry. The manufactures include cotton and woolen goods, lace, candles, soap, and machinery. In 1871 it was the scene of a decisive battle, in which an army of 100,000 French was defeated by the Germans under Prince Frederick Charles. Population, 1926, 69,467.

LEMARS (lē-märz′), a city of Iowa, county seat of Plymouth County, on the Floyd River, 25 miles northeast of Sioux City. It is on the Illinois Central and the Chicago, Saint Paul, Minneapolis and Omaha railroads. The chief buildings include the public library, the county courthouse, and the Western Union College (Evangelical). It has manufactures of flour, cigars, clothing, brick, and machinery. The surrounding country is agricultural. Population, 1905, 5,041; in 1925, 4,553.

LEMBERG (lĕm′bĕrg), a railroad and commercial city of Poland, capital of Galicia, situated in a fertile region, 362 miles northeast of Vienna. It consists of the old and new parts, the latter having regularly platted streets and most of the prominent buildings. Many of the streets are paved with stone and asphalt. It has eight monasteries and many churches, and is the seat of Greek Catholic, Armenian, and Roman Catholic archbishoprics. Among the noteworthy buildings are the Polytechnic Institute, the city hall, the government house, the museum, and the archiepiscopal palace. The university was founded by Joseph II. In 1913 it had an attendance of 2,050 students. The university library has 175,000 volumes. Lemberg is a jobbing center and general market. It has manufactures of glass, clothing, furniture, jewelry, earthenware, and machinery. It was captured by the Russians in 1915, but General Mackensen recaptured it for the Austro-Germans. Population, 1922, 212,680.

LEMMING (lĕm′mĭng), a rodent quadruped found in the northern parts of America and Europe, particularly in Norway and Sweden. It is allied to the rat and mouse. Several species have been described, of which the *common lemming* of Europe is the best known.

LEMMING.

It is about six inches long and has a short tail. The general color is brownish, the limbs are short, and the head is large. It feeds on grass, reindeer moss, vegetables, and lichens. The favorite habitations are in burrows a short distance below the surface, in which the female brings forth several litters of young per year, numbering from three to five at a birth. These animals are noted for migrating at certain periods, especially at the approach of winter, when they form an immense line and proceed in parallel columns. In their course they are preyed upon by flesh-eating animals, such as wolves, foxes, and bears, but they move across streams and mountains and even venture far into large bodies of water, where many lose their lives. The *banded lemming,* found in the vicinity of Hudson Bay, is the best known American species. It extends as far southward as the northern part of the United States.

LEMNOS (lĕm′nŏs), an island in the Aegean Sea, the most northerly of the Grecian Archipelago, situated midway between Mount Athos and the Hellespont. The area is 160 square miles. It has several large bays, the extinct volcano Mosychlus, and a generally productive soil. The productions include cereals, wine, tobacco, and fruits. In 1657 the island passed from the Venetians to the Turks, since which time it has been a Turkish possession. Lemnian earth, a soft aluminum silicate, was first found in Lemnos, but occurs also in Russia, Bohemia, India, and other countries. It is caused by a decay of feldspathic rocks, has a fatty consistency, is reddish in color, and is used as a medicine in cases of dysentery and other diseases. Lemno, or Kastro, is the chief town. The inhabitants consist chiefly of Greeks. Population, 1922, 29,406.

LE MOINE (lê moin′), **Sir James MacPherson,** author, born at Quebec, Canada, Jan. 24, 1825; died in 1916. He studied at Le Petit Séminaire de Quebec and in 1850 was admitted to the bar. For some time he served as internal revenue inspector at Quebec, but in the meantime devoted himself to the study of natural history. His writings are partly in French and treat chiefly of history and themes of natural history. They include "Picturesque Quebec," "Canadian Heroines," "Legendry Lore of the Lower Saint Lawrence," "Maple Leaves," "Birds of Quebec," and "Ornithology of Canada."

LEMON, the fruit of the tropical or subtropical tree *Citrus Medica,* of the orange family, originally native to the tropical portions of Asia. It is quite certain that lemons were unknown to the ancient Greeks and Romans and that this fruit was introduced into Spain by the Arabs about the 12th century. The lemon tree has since been naturalized extensively. Many highly improved species have been produced by cultivation. The fruit is ellipsoidal, with a protruding point at each end, and from two to four inches in length. It has a bright yellow color, the skin is quite thick, and the internal pulp is very acid and juicy. From eight to twelve compartments are in the fruit, each containing several seeds. On account of their keeping property lemons are more profitable to grow than oranges. The tree is knotty-wooded, has oval leaves, and grows to a height of about eight feet. It bears very abundantly, many trees producing 3,000 lemons in a favorable season.

The fruit of the lemon tree is gathered while still green, wrapped in small papers, and shipped in boxes for consumption in the general market, the ripening taking place in transit or while kept in the store. Among the favorite species of lemons are the sweet lemon, thin-skinned lemon, common lemon, and citron lemon. The principal uses are for the manufacture of oil of lemon, for flavoring in cookery, to make lemonade and other drinks, as a stimulant in medicine, and for perfumery. Oil of lemon is a volatile product and is secured from the rind by pressure. Lemon extract is made largely from the more imperfect fruit by squeezing, and, after removing all foreign properties, it is prepared with deodorized spirits and filtered. The most extensive production of lemons in the United States is in California and Florida, where large fields are cultivated successfully, and immense quantities are transported to all parts of America. They are grown in large orchards in the warmer parts of Europe and America, especially in the islands and countries of the Mediterranean. However, the Greek island of Andros and Sicily are particularly important in the culture of the lemon tree. In 1790 the cultivation of the lemon was introduced into Australia, where it is proving profitable.

LEMON.
A, Flower; *B,* Section of Fruit.

LEMON, Mark, author, born in London, England, Nov. 30, 1809; died May 23, 1870. He studied at a school in Cheam and at an early age began to contribute tales and verses to magazines. In 1841 he joined Henry Mahew in cotablishing *Punch,* the well-known humorous periodical of London, of which he was sole manager until his death. For some time he was a writer of the *Illustrated London News.*

LEMUR (lĕ′mŭr), a family of mammals allied to the monkey, found mainly in Madagascar, but related species are common in Africa, Southern Asia, and the Philippines. The body, tail, and snout are long. A few species, as the *slender loris,* are tailless, but nearly all have a bushy tail which is about as long as the body. Most of these animals have longer hind legs than fore legs and are peculiarly odd in appearance. All are harmless and some build nests like birds. They inhabit forest districts, move about principally by night, and may be domesticated, when they become docile and playful. The food consists of insects, vegetables, reptiles, birds, and fruits. Most of the species resemble the monkey in many respects, while others have foxlike faces and are about the size of a cat.

LENA (lyĕ′nȧ), one of the largest rivers in the world, rises near Lake Baikal, in southern Siberia, has a northeasterly course to Yakutsk, and thence flows nearly north into the Arctic Ocean. The entire length is 2,775 miles, the basin contains 950,000 square miles, and the delta is 250 miles wide. From May to October it is navigated, forming the most important transportation route of eastern Siberia, but the remainder of the year it is frozen. The valley is highly fertile, especially the upper part, where stock raising and farming are extensive industries. It receives the inflow from the Kuta, the Vitim, and the Kirenga.

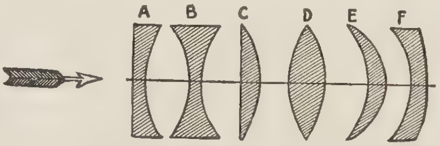
LENINE, Nikolai, public man, born at Simbrisk, Russia, in 1868. Although of noble birth, he allied himself with the socialists. He was a member of the second Duma, where he affiliated with the labor party. He went to Switzerland in 1914 to promote peace. In 1917 he returned to Russia and supported the activities of Leon Trotzky and officiated as a leader among the Bolsheviki. He died Jan. 21, 1924.

LENORMANT (lẹ-nôr-män′), **Charles,** art critic and archaeologist, born in Paris, France, June 1, 1802; died in Athens, Greece, Nov. 24, 1859. He studied law, but, after traveling in Italy, decided to devote his life to archaeological research. He accompanied Jean François Champollion (1790-1832) to Egypt in 1828, where he assisted in exploring several ancient ruins, and, after returning to France, was made professor of Egyptian archaeology at the College of France. He wrote "Introduction to Oriental History." His son, François Lenormant (born in Paris, Jan. 17, 1837; died there Dec. 10, 1883), likewise attained to fame as an archaeologist.

LENOTRE (lẹ-nō′trĭ), **André,** landscape gardener, born in Paris, France, March 12, 1613; died Sept. 15, 1700. He studied painting with Lebrun (q. v.), but soon gave it up for the work of a landscape artist. Later he succeeded his father as superintendent of the gardens of the Tuileries. He laid out many noted parks, including those of Versailles, Fontainebleau, and Chantilly. In 1678 he went to Rome, where he laid out the gardens of the Vatican and the Quirinal. Later he platted the Kensington and Saint James gardens in London.

LENOX (lĕn′ŭks), **James,** philanthropist, born in New York City, Aug. 19, 1800; died Feb. 18, 1888. After graduating at Columbia College, he studied law, and at the death of his father inherited a vast fortune. He devoted nearly a half century to the collection of books, which, in 1870, were valued at $1,000,000, and these he donated to found the Lenox library in New York City. He gave land and $500,000 for the erection of the Presbyterian hospital. His cash gift to the Lenox library was $450,000.

LENS, a piece of transparent substance, usually glass, so called from the resemblance in form to the seed of a lentil, which is like a double-convex lens. A lens is shaped so as to afford two regular opposite surfaces, both curved, or one plane and the other curved, and designed to change the direction of rays of light, and for increasing or diminishing the apparent size of objects viewed through it. A lens that hollows or rounds inward is said to be concave; one that rounds outward, convex. The curved surfaces are usually spherical. Six distinct kinds of the ordinary lenses of this description are in general use. They are employed in the manufacture of telescopes, opera glasses, stereoscopes, spectacles, microscopes, lanterns, and other instruments and devices. The best grade of crown or flint glass is used in making lenses for microscopes and telescopes, and, since great accuracy is necessary in grinding and polishing, the lenses for the larger instruments represent much value. The six varieties of curved lenses include the double-convex lens, plano-convex, double-concave, meniscus, plano-concave, and concavo-convex. The *meniscus* are lenses in which the convexity is greater than the concavity, and the *concavo-convex* have greater concavity than convexity. See **Light.**



A, Plano-concave. B, Double-concave.
C, Plano-convex. D, Double-convex.
E, Meniscus. F, Concavo-convex.

LENT, a fast of forty days, observed annually from Ash Wednesday until Easter by the Anglican, Roman Catholic, and other churches as a season of special penitence and self-denial. It was instituted by the early Christian Church in commemoration of the resurrection of Christ, and to commemorate his fast of forty days in the wilderness. Originally the fast was but 36 days, the four additional being added in the 5th century, which change was generally accepted. Much rejoicing accompanies the close of Lent in Roman Catholic countries, and its beginning is preceded by the carnival. In many churches the fasting is left to the individual conscience of each member, but all are admonished to be diligent in prayer.

LENTIL (lĕn'tĭl), a plant cultivated extensively in Europe and elsewhere for fodder and for human food. It grows to a height of about twenty inches, has numerous branches and whitish flowers, and bears seeds about as large as a pea. Garden lentil and field lentil are the two species commonly cultivated in Germany, France, Syria, and Egypt. Lentil straw is a wholesome fodder for stock. The seeds are used in cookery for soup, or are baked and prepared much like beans and peas. Formerly lentil was unknown in Canada and the United States, but its cultivation has been introduced into these countries.

LEO. See **Zodiac.**

LEO, the name of thirteen popes, four of whom are treated in articles below, and the others reigned as follows: Leo II., from August, 682, to July, 684; Leo IV., from 847 to 855; Leo V. succeeded Benedict IV., in 903, and reigned thirty days; Leo VI. succeeded John X., in 928, and reigned about seven months; Leo VII., from 936 to 939; Leo VIII., from 964 to 965; Leo IX., from 1049 to 1055; Leo XI. succeeded Clement VIII., on April 1, 1605, and died on the 27th of the same month; Leo XII., from 1823 to 1829. See **Pope.**

LEO I., surnamed The Great, Pope of Rome, born in Rome, near the end of the 4th century; died there in the year 461. He descended from a distinguished family, received a liberal education, and in 440 succeeded Sixtus III. as Pope. In the early part of his reign the Huns threatened to overrun Italy, and, after Atilla captured Aquilcia, he led his hosts against Rome, but Leo met him at the Po River and persuaded him to spare the city. In 455 the Vandal chief Genseric made an attack upon Rome, but would not be persuaded by Leo to spare the city, though at his request he restrained from murder and exempted the oldest basilicas from plunder. Leo was distinguished for remarkable zeal in pontifical duties. His letters and other writings are strong evidences of his devotion and ability.

LEO III., Pope of Rome, born in 750; died June 11, 816. He was a native of Rome and was elected to succeed Adrian I. on Dec. 26, 795. During his reign occurred the establishment of the Western Empire. His pontificate was disturbed by several conspiracies, the first occurring in 799, when he retired to Spoleto, but soon after met Charlemagne in conference at Paderborn. Subsequently he was received at Rome with much honor and, in 800, he crowned Charlemagne as Emperor of Rome. The latter granted him temporal sovereignty over the city of Rome and the state, and in 804 Leo visited the court of Charlemagne at Aix-la-Chapelle. In 815 a conspiracy was formed against Leo, on account of which a number of participants were executed. This led to a dispute with the successor of Charlemagne, Louis le Débonnaire, and the sovereign jurisdiction of Leo in Rome was called into question. The controversy was not concluded until after his death.

LEO X., Giovanni de' Medici, Pope of Rome, born in Florence, Italy, Dec. 11, 1475; died Dec. 1, 1521. He was the second son of Lorenzo de' Medici, who designed him for an ecclesiastical career, and secured the ablest scholars obtainable as his teachers. Innocent VIII. made him a cardinal when only thirteen years of age, and, when the Medici family was expelled from Florence, he sought the acquaintance of learned society by traveling in Germany, France, and the Netherlands. In 1503 he returned to Rome. Julius II. appointed him legate in 1511, a position by which he secured nominal direction of the Spanish and papal army which was then besieging Bologna. On April 11, 1512, the French and Italian troops were successful in the Battle of Ravenna and he was taken prisoner. When the conquering army evacuated Milan, he effected his escape. On March 11, 1513, he succeeded Julius II. as Leo X. Soon after his election the King of France made an effort to conquer Milan, but Leo repelled the invasion and began to solidify and strengthen his dominion.

Pope Leo began early in his pontificate to favor learning, for which purpose he called to his assistance the most eminent scholars of his time, among them Bembo and Sadoleto, who became his secretaries. He established a Greek college at Rome, endowed a number of Greek newspapers, and encouraged sculpture, painting, architecture, and internal improvements. Desiring to rebuild Saint Peter's, he permitted the issuance of indulgences to contributors, a course which stimulated the Protestant Reformation in Germany to greater activity under the leadership of Martin Luther. Leo treated the Reformation as a controversy between Luther and Tetzel, but condemned Luther's doctrines and sought at first to counteract them by moderate means, and afterward by more severe procedure, but the rising was too powerful and the papal loss in Germany became irreparable. Leo ranks in history as a man of excellent private conduct and moral aptitude, and died amid political prosperity, but with the Reformation in a state of vigorous development.

LEO XIII., Pope of Rome, son of Count Ludovico Pecci, born in Carpineto, Italy, March 2, 1810; died July 20, 1903. He entered the Jesuit college at Viterbo in 1818, later studied at the Collegio Romanio, and taught philosophy in German College. His ability as a student and speaker was recognized at an early date, being able to write Latin with facility at the age of twelve and showing like aptitude in other branches of study. His education was completed at the College of Noble Ecclesiastics and the Roman University and, in 1837, Gregory XVI. conferred the priesthood upon him. Subsequently he filled a number of important positions in the church, was created cardinal by Pius IX. in 1853, and in 1877 was appointed to fill the important office of cardinal camerlengo of the Roman Catholic Church, succeeding Cardinal de Angelis. In that position he was head of the church in temporal matters, made arrangements for the last solemn obsequies of Pius IX., and received the Catholic ambassadors for the conclave. On Feb. 20, 1878, he was chosen successor of Pius IX., assuming the name of Leo XIII.

LEO XIII.

The policy of Pope Leo from the first was to act with modern means in government, but he maintained the right of restoration to the temporal power and sovereignty. Among his most noted achievements may be enumerated the arbitration in relation to the *Kulturkampf* in Germany, the establishment of terms with the clergy in France, and the restoration of the hierarchy in Scotland. In a dispute between Germany and Spain, in relation to the Caroline Islands, he acted as arbitrator, and took a prominent part in suppressing the slave traffic in Africa. As affecting the laboring classes he promulgated several letters in opposition to socialism, indicating that the labor question may be settled by the application of Christ's religion under the influence and authority of the Papacy. He maintained views regarding education in opposition to secularization, taking positions in this line on the Manitoba school questions and controversies arising elsewhere. He gave support to the ancient doctrine that the Pope stands as the vicegerent of Christ and, in an open letter to W. E. Gladstone, confirmed the explicit view of his predecessors that all ordinations under Anglican rites are invalid. As a scholar he had a high standing, encouraged learning, and wrote a number of poems.

LEOCHARES (lē̇-ŏk′ȧ-rē̇z), a famous sculptor of ancient Greece, who flourished in the 4th century B. C. He is classed as a member of the younger Attic school. Among his productions are a statue of Isocrates and his "Abduction of Ganymede by the Bird of Jove," besides other portrait statues. Philip of Macedon engaged him to execute memorials of his victory at Chaeronea.

LEOMINSTER (lĕm′ĭn-stẽr), a town of Worcester County, Massachusetts, on the Nashua River, five miles south of Fitchburg. It is on the Boston and Maine and the New York, New Haven and Hartford railroads. The surrounding country is agricultural and dairying. It has electric street railways, public lighting, city waterworks, and a library of 18,000 volumes. The manufactures embrace musical instruments, linen and woolen goods, buttons, clothing, toys, and utensils. It was settled in 1725, but formed a part of Lancaster until 1740, when it was incorporated as a separate town. Population, 1905, 14,297; in 1925, 22,120.

LEÓN (lā̇-ōn′), a city of Mexico, in the state of Guanajuato, 32 miles west of Guanajuato. The site is in a fertile plain, on railways and regular routes of travel. It has manufactures of machinery, cotton and woolen goods, and leather. Among the chief buildings are a library, the city hall, and a number of schools and churches. It has modern municipal facilities, including waterworks, sewerage, and a public park. The jobbing trade is extensive. Population, 1906, 64,632; in 1920, 63,263.

LEÓN, the principal city of Nicaragua, Central America, capital of the department of León, on the shore of Lake Managua, twelve miles from the Pacific. It is surrounded by fertile plains, has good railroad connections, and is well improved with pavements and parks. León is the seat of an episcopal palace, several churches, and the College of Saint Ramon. It has a good public school system, modern municipal facilities, and contains a massive cathedral. The manufactures and commercial enterprises are important. It has a growing trade in live stock, cereals, fruits, and merchandise. Population, 1922, 62,402

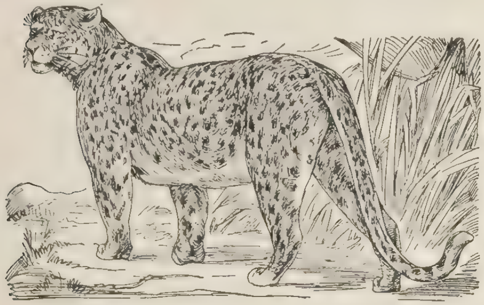
LEON, a city of Spain, capital of the province of León, 81 miles northwest of Valladolid. It is celebrated as the capital of an ancient kingdom of the same name. The city was founded by the Romans, who named it Legio. Population, 1922, 18,041. See **Spain.**

LEONARDO DA PISA (lā̇-ō̇-när′dō̇ dä pē′zȧ), or **Leonardo Bonaccio**, mathematician, born in Pisa, Italy, in 1170. He studied under a master who taught the Arabic system of arithmetic, and traveled in Syria and Egypt, which enabled him to extend the knowledge of mathematics in Europe. Some writers think he was the first to introduce algebra into Europe. It is not known when he died.

LEONHARD (lā̇′ōn-härt), **Karl Cäsar von,** eminent geologist, born near Hanau, Germany, Sept. 12, 1779; died in Heidelberg, Jan. 23, 1862. He studied at Marburg and Göttingen, after which he devoted several years to work on scientific journals, and held important offices in the principality of Hanau. In 1814 he retired from public office to apply his entire time to scientific research, and in 1816 became a member of the Bavarian academy of sciences. Two years later he was made professor of geology and mineralogy at Heidelberg. The most important of his numerous works is "Basis of Mineralogy." From 1830 to 1858 he published the *Year-Book of Mineralogy, Geognosy, Geology, and Petrification.*

LEONIDAS (lê-ŏn′ĭ-dȧs), King of Sparta, born in the latter part of the 5th century B. C. He was the son of Anaxandrides, succeeded his half-brother, Cleomenes I., as King of Sparta, and distinguished himself in defending the pass of Thermopylae against Xerxes. The Greek congress placed the command of the forces designed to defend the pass upon Leonidas. With a force of 5,000 men, aided by about 300 Spartans, he made a heroic defense with apparent success, but the Persians were informed of a mountain pass, through the treachery of Ephialtes, and in attempting to resist the combined attack from front and rear Leonidas and the band of 300 Spartans fell after making a remarkable resistance. The conduct of this noble band was an inspiration to the Grecians. It has been celebrated in song and story by the master writers of the world.

LEOPARD (lĕp′ẽrd), a ferocious, carnivorous mammal native to Asia and Africa. It is regarded by some writers as allied to the panther, by some as a species of it, and by still others as a distinct species. The color is largely a pale fawn spotted with dark brown or black in rosettes or broken rings. The lower part of the body is whitish, the tail is long, and the movements are graceful and rapid. It can leap over precipices with ease and readily ascend trees, from which it springs upon its prey with marked certainty. The leopard is bloodthirsty, often killing more than it can devour for the sake of the fresh blood, and steals from ambush upon its prey, such as poultry, deer, antelope, or any animals it can destroy. The favorite haunts are in the woods. Its size and strength are sufficient to overcome a man, but it rarely attacks human beings, except in defense or when in dire need of food.


LEOPARD.

LEOPARDI (lȧ-ô-pär′dê), **Giacomo,** scholar and poet, born at Recanati, Italy, June 29, 1798; died in Naples, June 14, 1837. He descended from a noble family, was able to speak Latin and Greek at the age of sixteen, and early developed a proficiency in French, Spanish, Hebrew, German, and English. In 1822 he visited Rome and shortly after was offered the chair of Greek philosophy at the University of Berlin, but declined the offer to engage in literary research. He was of a despondent mind, but showed a genius equal in many respects to Dante. His writings consist principally of dialogues in prose and a number of volumes of poetry, all of which are characterized by elegance of style, depth of thought, and marked originality. "Il sabato del villagio" is considered his best poem.

LEOPOLD (lē′ô-pōld), the name of two German, or Holy Roman, emperors. Leopold I. was born June 9, 1640; became King of Bohemia and Emperor of Rome in 1658; and died May 5, 1705. Leopold II., son of Francis I., was born May 5, 1747; became emperor in 1790; and died March 1, 1792. The latter was succeeded by his son, Francis II.

LEOPOLD I., King of Belgium, born in Coburg, Germany, Dec. 16, 1790; died Dec. 10, 1865. He was the son of Francis, Duke of Saxe-Coburg-Saalfeld, received a liberal education, and entered the Russian army, in which he became a general and took part at the battles of Lützen, Bautzen, Leipzig, and Köln. After the peace of 1815, he visited England, where he married Princess Charlotte, heiress of the throne, in 1816, and received an annual pension of $250,000. Princess Charlotte died in 1817, after which he resided in London, and in 1830 declined the crown of Greece. A national congress elected him King of the Belgians in 1831 and, on July 21 of that year, he was inaugurated at Brussels. The following year he married Princess Louise, daughter of the French king, Louis Philippe. His wife died in 1850, but bore three children, including the Crown Prince Leopold, another son, and a daughter. His administration was highly acceptable to the people of Belgium, being moderate, mindful of industrial and educational advancement, and showing a strict regard for the principles of the national constitution.

LEOPOLD II., King of Belgium, son of Leopold I., born in Brussels, April 9, 1835; died Dec. 17, 1909. He was educated in the leading schools of Belgium and Germany. His title as crown prince was Duke of Brabant. He served as a member of the national senate, in which he became distinguished as an influential advocate of internal and maritime improvements. On Aug. 22, 1853, he married Archduchess Maria of Austria. At the death of his father, on Dec. 10, 1865, he was crowned as Leopold II. In policy his administration was mindful of the constitution and followed the policy of the vigorous reign of his father. He took an active interest in promoting the exploration of Africa and was practically the organizer of the Congo Free State, which region was placed under his sovereignty in 1890 by an international conference. In the administration of the government he was highly successful, and enjoyed the confidence and respect of his constituents.

LEOPOLD II.

LEOPOLDVILLE, a city of the Congo Free State, on the Congo River, at the outlet of Stanley Pool. It is connected by a number of important railroads, giving it decided trade advantages. The cataracts occupy a distance of 235 miles and are impassable by vessels, but about 7,000 miles of the Congo River and its tributaries above Leopoldville are navigable, hence the importance of the city as a trade and commercial center. The streets are platted at right angles. It has electric lights, waterworks, and several fine schools and churches. The city was named from Leopold, King of Belgium. Population, 1922, 21,785.

LEPANTO (lḗ-păn'tṓ), or **Naupaktos**, a seaport of Greece, on the north coast of the Gulf of Corinth, or Lepanto. Anciently it was of vast commercial importance. It came into possession of the Athenians after the Persian wars. The Venetians fortified it in 1477 and improved its harbor. On Oct. 7, 1571, a memorable battle occurred near Lepanto between the fleet of the Turkish Sultan and the allied fleets of Philip II. of Spain, Pope Pius V., and the republic of Venice. Prince Don John of Austria commanded the allied fleets, while the Ottoman fleet was under the command of Ulutch Ali of Algeria, Ali Pasha, and Mohammed Sirocco of Egypt. The battle raged four hours and terminated in the destruction of the Ottoman fleet of 200 galleys and sixty other vessels. From the Battle of Lepanto dates the decline of Turkish power in Europe.

LEPIDUS (lĕp'i-dus), **M. Aemilius**, member of the second Roman triumvirate. He first became prominent in statesmanship as a consul in 46 B. C. He was a man of much wealth and influence and was appointed by Caesar to the government of Narbonensis in Gaul, in 44 B. C. Caesar's death occurred before he left Rome, and, accordingly, he sided with Mark Antony. In 43 B. C. he joined Octavianus and Antony in the triumvirate and received as his share of the empire Narbonensis and Spain. The following year he received Africa, where he ruled until 36 B. C., and, after endeavoring to seize Sicily, he was deposed from the triumvirate by Augustus and banished to Circeii, where he died in the year 13 B. C.

LEPROSY (lĕp'rṓ-sy̆), a chronic skin disease characterized by ulcerous eruptions and successive scaling off of dead skin. Those affected show symptoms that include thickening of the skin, loss of hair and feeling, offensive perspiration, ulceration, and death of parts. Two forms are generally recognized, known as tuberculous and nontuberculous, or anaesthetic. In ancient times many skin diseases were regarded as leprosy, but it is now generally restricted to *elephantiasis*, the name applied by the Greeks, and designated *lepra* by the Arabs. Leprosy is hereditary. It is regarded contagious, being caused by a minute organism, a bacillus, which may be conveyed to those not affected, and after a time develops the worst forms known. In former times the disease was prevalent to a vast extent, but was found more frequently in men than in women, and prevailed principally among the people who were excessively exposed to filth, poverty, and cold damps. At present it prevails most extensively in Iceland, the Pacific islands, the Hawaiian Islands, the West Indies, Madagascar, the Greek archipelago, in the vicinity of the Mediterranean, and the East Indies.

Increased efforts have been made within recent years not only to limit the spread of leprosy, but to provide adequate care for those afflicted. In Louisiana is a plantation for lepers, on which several hundred receive treatment, while similar provisions have been made in a number of the other states. One of the largest colonies of lepers now within the domain of the United States is on the island of Molokai, one of the Hawaiian group, where about 1,250 persons are confined, about one-third of whom are females. Visitors have access to the colony but the leprous are separated from others by wire fencing. A semiofficial estimate published in 1928 placed the number of lepers in the Philippine Islands at 30,000, most of whom are in the Visayas. Japan has 200,000 registered lepers. An estimate places the number in India and China at 500,000 for each country.

LEPSIUS (lĕp'sḗ-ōōs), **Karl Richard**, noted Egyptologist, born in Naumburg, Germany, Dec. 23, 1810; died July 10, 1884. He studied at Leipzig, Göttingen, and Berlin, and secured a doctor's degree in 1833. The following year he was awarded a prize at Paris on account of an essay. Soon after he published his "Means of Studying Philology." In 1835 he began historical research of Egyptian antiquaries, for which purpose he visited Rome, where he met Bunsen, and in 1842-45 was delegated by the King of Prussia to make explorations in Lower and Upper Egypt. His party assembled in Alexandria in 1842, whence he directed an extensive research of various ruins, monuments, and tombs. After his return to Berlin, he became professor in the University, but in 1866 visited Egypt a second time to explore the Nile delta. He became librarian of the state library of Prussia at Berlin in 1874. His publications include "Universal Standard Alphabet," "Chronology of the Egyptians," "Monuments of Egypt and Ethiopia," "Cosmos," and "Death Book of the Egyptians."

LERMONTOFF (lyĕr′môn-tôf), **Mikhail Yuryevitch,** scholar and poet, born in Moscow, Russia, Oct. 15, 1814; died July 15, 1841. He was educated at Moscow and Saint Petersburg, became an official in the imperial guard in Russia, and in 1837 was sent as an officer of dragoons to the Caucasus. His death resulted from a duel in which he was mortally wounded by a fellow-officer. The writings of Lermontoff are among the most celebrated of Russian products. His best known works include "Song of the Czar Ivan Vasilievitch," "A Hero of our Times," "The Demon," and "The Dream of Valerika."

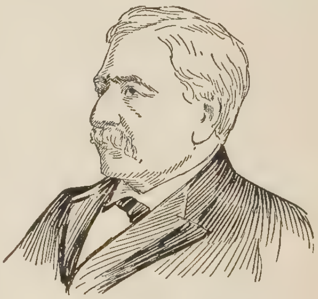
LE SAGE (lẹ säzh), **Alain René,** dramatic writer and novelist, born in Sarzeau, France, May 8, 1668; died in Boulogne, Nov. 17, 1747. He was educated at the college of the Jesuits at Vannes, entered upon the study of law at Paris in 1692, and soon after was admitted as an advocate. He married a Parisian lady in 1695 and soon after began to devote his entire time to literary research. In his work he secured the assistance of Abbé de Lyonne, who granted him a pension and the free use of a large Spanish library, by which his study of the Spanish was facilitated. His first work of importance is the translation of the "Adventures of Don Quixote," after which he produced many original dramas and novels, some of them being among the finest gems in the French language. His "Gil Blas de Santillane" is regarded his masterpiece, the fourth volume of which appeared in 1735. This work has been translated into many modern languages and is distinguished for its characteristic delineation of character, accurate language, and superb style. His writings include "The Adventures of Robert," "Asmodeus," and "Orlando Innamorato."

LESBOS, or **Mytilene,** an island in the Aegean Sea, formerly a possession of Greece, but now a part of Turkey. It is situated near the coast of Asia Minor, has a triangular form, and includes a total of 675 square miles. The surface is generally mountainous, but there are large tracts of fertile coast and valley lands. Among the chief products are pine timber, live stock, cereals, and tropical fruits. Aeolian colonists settled the island at an early period and built cities upon it. The poets and literary men of Lesbos included Sappho, Theophrastus, Arion, Pittacus, and several others famous in the history of Greece. Since 1462 it has been a possession of Turkey. The inhabitants consist almost entirely of Greeks and Turks, but the former are in the majority. Population, 1922, 128,403.

LESINA (lĕs′ē-nä), an island in the Adriatic Sea, near Dalmatia, belonging to Austria. It is thirteen miles long and has an undulating surface. The principal town is Lesina, which has a good harbor, and exports fruits and cereal products. Population, 1922, 15,236.

LESLIE (lĕz′lĭ), **Charles Robert,** noted painter, born in London, England, Oct. 19, 1794; died there May 5, 1859. He descended from American parents and settled with them at Philadelphia in 1799, where he was educated and engaged as bookseller. Later he pursued private study in art, but in 1811 went to London, where he entered the Royal Academy, and subsequently formed the friendship of Coleridge, Washington Irving, West and Allston. After completing his studies and engaging largely in the painting of portraits and historic scenery, he returned to America, and in 1833 became teacher of drawing at the West Point Military Academy. This position he resigned the following year and returned to England, where he continued to reside until his death. His best known productions include "Saul and the Witch of Endor," "May-day in the Time of Queen Elizabeth," "Sancho Panza and the Duchess," and scenes from the writings of Addison, Le Sage, Swift, Shakespeare, Cervantes, Fielding, Moliere, Sterne, and Smollett. His works are noted for their genial humor and excellence in composition.

LESSEPS (lå-sĕps′), **Ferdinand de, Viscount,** diplomatist and engineer, born in Versailles, France, Nov. 19, 1805; died Dec. 7, 1894. After securing a liberal education, he was sent for diplomatic service to Lisbon in 1839, and subsequently held similar positions at Barcelona, Tunis, and Alexandria. He was detained in quarantine at Port Said in 1841 and while there conceived the utility of the Suez Canal, which he began to agitate in 1856 by publishing outlines of the proposed course across the Isthmus of Suez. The Viceroy of Egypt granted a charter, but the project was delayed by the active opposition of various nations, particularly England, but De Lesseps succeeded in securing the necessary encouragement and capital, and the canal was formally opened to traffic on Nov. 17, 1869, the exercises being witnessed by the Emperor of Austria, the Crown Prince of Prussia, and the Empress of France, besides many other distinguished individuals.


FERDINAND DE LESSEPS.

In 1873 De Lesseps began the agitation in favor of a canal across the Isthmus of Panama, and in 1876 formed a company to promote the enterprise. The Colombian government granted exclusive privilege to the company in 1879 and active work began in latter part of 1881. It was estimated that the canal would cost $120,000,000, but, after expending $280,000,000, only a small portion of the necessary excavation had been effected and the company dissolved in 1889. Later charges of fraud were brought against the company by the government and several officers were sentenced to imprisonment, but in the case of De Lesseps the sentence was suspended. Though he did not live to realize the great enterprise of connecting the Caribbean Sea with the Bay of Panama, it is well known that he did not calculate an impossibility. Among the honors bestowed upon him are the grand cross of the Legion of Honor in 1869, membership in the French Academy in 1884, and knighthood by Queen Victoria. In 1886 he was a delegate to the dedication of the Statue of Liberty in New York harbor.

LESSER ANTILLES. See **Leeward Islands; Windward Islands.**

LESSING (lĕs′sĭng), **Gotthold Ephraim,** scholar, dramatist, and critic, born in Camenz, Germany, Jan. 22, 1729; died in Brunswick, Feb. 15, 1781. His father was a minister of the Orthodox Lutheran school, and first sent young Gotthold for elementary training to Meissen, but later to the University of Leipzig, where he began a theological course. Soon after he developed a fondness for literary research, gave up theology, and subsequently settled at Berlin, where he began, in 1748, to write for periodicals in connection with his friend Mylius. His first work was a quarterly, entitled "Contributions to the History and Improvement of the Theater." He translated a work from the Spanish contributed to *Vosses' Gazette,* and published a collection of poems entitled "Trifles." His "Sarah Sampson" appeared in 1755, and by it he introduced an original character and new life into German literature.

General Tauenzien, governor of Silesia, selected him as secretary in 1760, after which he resided five years in Breslau, when he returned to Berlin and published "Laocoön; or, The Limits of Painting and Poetry." He became director of the national theater at Hamburg in 1767 and while there wrote his "Hamburg Dramatics." The criticism contained in this work aroused opposition, on account of which he left Hamburg, but was selected librarian by the Duke of Brunswick. Other works published by him are "Nathan the Wise," "The Jews," "The Training of Mankind," and "Minna von Barnhelm." The name of Lessing is one of the most eminent in German literature, his influence being potent in counteracting French tendencies. He encouraged a distinctly German literary spirit, one in which thought, taste, and genius bring forth the beauties of that language. Perhaps no writer has been more successful in strengthening literary criticism. His style is concise, but peculiarly vigorous.

LETHBRIDGE, a city of Alberta, 107 miles southeast of Calgary, on the Belly River and on the Canadian Pacific and other railroads. It is in a farming and coal mining section. It has flour mills, machine shops, iron foundries, bakeries, grain elevators, and lumber works. The features include electric lights and railways, courthouse, high school, federal building, and Galt Hospital. It was settled in 1885 and incorporated in 1890. Population, 1921, 11,097.

LETHE (lē′thē), a stream mentioned in Grecian mythology, which flowed gently and silently in a secluded vale of Elysium. The waters of the Lethe had the property of dispelling care and producing utter forgetfulness of former events. The Pythagorean doctrine of the transmigration of souls implied that after the mortals had inhabited Elysium a thousand years they were destined to animate other bodies on earth, and, before leaving Elysium, they drank of the waters of the River Lethe in order that they could enter upon their new career without any remembrance of the past.

LETTER, as commonly understood, the name applied to a written message or communication. Previous to the modern rapid transit of intelligence, letters served a quite different purpose than they do at present in that they assumed the form of epistles. These writings now constitute a large part of the literature that has come down to us through the centuries. We find in the literature of all languages men who were especially noted for extraordinary ability in letter writing. Such, for instance, were Walpole, Cowper, and Gray among the English; Goethe, Humboldt, and Schiller of the Germans; and Voltaire and Madame de Sévigné among the French.

LETTERS OF MARQUE AND REPRISAL, a commission issued by a state or government authorizing the bearer to pass beyond the boundaries of his own country for the purpose of capturing prizes of the enemy, consisting of their persons or goods. The term *letters of marque* signifies a license from the government to pass beyond the limits or jurisdiction of one's own country. On the other hand, *reprisal* signifies taking in turn.

LETTS (lĕts), a people inhabiting portions of Europe, largely in Latvia, Esthonia, Lithuania, and Russia. In language they are closely allied to the Lithuanians, but have a distinct literature. In 1586 the Lutheran Catechism was translated into the Lettic language. Many literary products of the Letts have much value, including numerous translations from the German, Scandinavian and Russian. Most of these people are Protestants. The total number is about 1,550,000.

LETTUCE (lĕt′tĭs), an annual plant of the order *Compositae,* cultivated in gardens as a salad. Many species are grown, most of which attain a height of two feet, bear yellowish flowers, and have variously formed leaves. The plant is in its best state when from four to six inches tall, when it is tender and best adapted as a food. Lettuce has been cultivated in gardens since very early times, but does not grow spontaneously in any country. It includes both greenish and purplish species. Some have heads resembling those found in several kinds of cabbage.

CABBAGE LETTUCE.

LEUCADIA, or **Santa Maura,** an island off the west coast of Greece, in the Ionian Sea. The area is 109 square miles. It is traversed by hills, but contains a fair proportion of fertile soil, and produces cereals, fruits, and wine. In the southern part is a line of white cliffs, the highest of which is about 2,000 feet, known as the Leucadian Rock, or the Lover's Leap, so called from despairing lovers throwing themselves from it. Amaxichi is the chief town. The inhabitants are chiefly Greeks. Population, 1922, 34,982.

LEUCTRA (lūk'trȧ), a village of Greece, in Boeotia. It is famous as the place where the Thebans under Epaminondas defeated the Spartans under Cleombrotus, in 371 B. C. Sparta had exercised an influence over Greece for several centuries, since the close of the Peloponnesian War, in 404 B. C., but it was terminated by the Battle of Leuctra.

LEUTHEN (loi'tẹn), a small town of Germany, in Lower Silesia, celebrated on account of a battle fought there on Dec. 5, 1757, by which Prussia recovered most of Silesia. The Prussian army consisted of 35,000 men under Frederick the Great, while 90,000 Austrians were under Prince Charles of Lorraine, but the former won a decisive victory.

LEUTZE (loit'sẹ), **Emanuel,** eminent painter, born in Gemünd, in Württemberg, Germany, May 24, 1816; died in Washington, D. C., July 18, 1868. He accompanied his parents to Philadelphia in infancy, where he attended school and developed skill in elementary drawing. His first product was completed in 1840, when he painted "An Indian Gazing at the Setting Sun," and the following year returned to Germany, where he studied at Düsseldorf under K. F. Lessing. In 1859 he returned to America and produced many historical paintings in his studio in New York City. He was made a member of the National Academy in 1860, secured a prize at the Brussels art exhibition, and painted a fine picture for the staircase of the Washington Capitol, entitled "Westward Ho." His "Washington Crossing the Delaware," now in Metropolitan Museum of Art, in New York, is considered one of the famous American products. Others of his products are "Columbus in Chains," "Washington at Monmouth," "Columbus Before the Queen," "Settlement of Maryland by Lord Baltimore," "News from Lexington," and "The Storming of Teocalli."

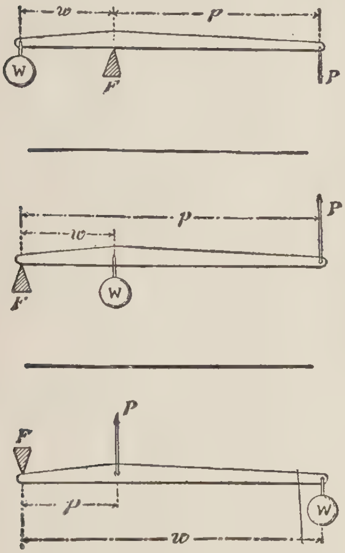
LEVANT (lḗ-vănt'), an Italian term, meaning the East. It is applied in a restricted sense to the Asiatic coast of the Mediterranean, from Constantinople to Alexandria, Egypt, but in a more general sense to the regions from Italy to the Euphrates and the Nile.

LEVASSEUR (lẹ-vȧ-sẽr'), **Emile,** economist, born in Paris, France, Dec. 8, 1828. He studied in the Collège Bourbon and was professor in the Lyceum Alençon for two years. In 1872 he was appointed professor in the College of France, where he served efficiently and promoted several international congresses for the discussion of geographical and statistical topics. In 1893 he visited the United States and attended the Columbia Exposition at Chicago. His writings are chiefly devoted to statistics and political economy.

LEVEE (lĕv'ḗ), a French term applied to embankments constructed to prevent water from overflowing level tracts of land, but now used in a similar way in the English and other languages. The most important levees of America are those of the lower Mississippi, which border the river for a distance of 1,200 miles. These levees are now almost continuous from Cairo, Ill., to the Gulf of Mexico, a distance of 1,000 miles. They serve to confine the stream to its natural channel. Other levees of vast extent are those of the Ganges River in Asia, of the Po River in Italy, and those of Holland, the latter being more commonly called dams.

LEVEL, an instrument for indicating a horizontal line, for determining the true level, or to ascertain the difference of elevation between two or more places. It is used in engineering, architecture, surveying, drainage, and in many other arts. The devices used for such purposes are numerous, including those in which the horizontal line is determined by a bubble of air floating in a fluid contained in a glass tube, as in a spirit level; those in which the horizontal line is determined by the surface of the fluid at rest, as in the water and mercurial levels; and those of the simpler forms used by carpenters and masons, in which the vertical line is determined by a plumb line and the horizontal by a line perpendicular to it. The action of gravity is the principle upon which all levels are based.

LEVER (lē'vẽr), an inflexible bar or rod moving upon a fixed point called the *fulcrum* or *prop*, and having the *weight* to be moved and the *power* to move it applied at two other points. The lever is one of the mechanical powers. It includes three classes, being numbered according to the relative positions of the fulcrum, the points of application, and the force of the weights. In levers of the *first class* the fulcrum is between the force and the power, as in a pump handle, in which the hand is the power, the water lifted is the weight, and the pivot is the fulcrum. Levers of the *second class* have the weight between the fulcrum and the force, as an oar, in which the hand is the power, the boat is the weight, and the water is the fulcrum. In levers of the *third class* the power is applied between the fulcrum and the weight, as in the treadle of some grindstones, in which the front end resting on the ground is the fulcrum, the foot is the power, and the force is transmitted by the rod to the weight, the wheel above. In the lever advantage is gained mainly at a loss of time, that is, a heavy weight may be lifted by a small power passing through a greater distance. The force being smaller, it passes through a greater distance than the weight, and for that reason is able to overcome material resistance. The power is increased by a system of compound levers, as in an ordinary farm scale, in which a heavy load may be balanced by a slight touch of the hand.



THREE CLASSES OF LEVERS.

LEVER, Charles James, novelist, born in Dublin, Ireland, Aug. 31, 1806; died in Trieste, Austria, June 1, 1872. In 1827 he graduated from Trinity College, studied medicine at Göttingen, Germany, and returned to practice medicine in Ireland. His first production was 'Charles O'Malley," a work in which many of the jovial incidents of college life are delineated. In 1832 he visited America, making a study of Indian life, and soon after contributed to the *Dublin University Magazine,* becoming its editor in 1842. The productions written during later life are less jovial, but more artistic and thoughtful. In 1845 he held a diplomatic position at Florence, became vice consul at Spezzia in 1858, and was appointed to a like position at Trieste in 1857. Among his writings are "Knight of Gwynne," "A Day's Ride," "Tom Burke," "The Dodd Family Abroad," "Fortunes of Glencore," and "Saint Patrick's Eve."

LEVERRIER (lẹ-vȧ-ryȧ'), **Urbain Jean Joseph,** noted astronomer, born at Saint-Lô, France, March 11, 1811; died at Paris, Sept. 23, 1877. After obtaining the necessary training, he was admitted to the École Polytechnique in 1831, and subsequently received an appointment as an engineer in connection with the tobacco board, a commission to supervise the manufacture and sale of tobacco. In 1837 he became a teacher of astronomy at the École Polytechnique, and while there made searching study of astronomical phenomena. He took observations of the transit of Mercury in 1845, publishing accounts of his discoveries, by which he secured admission to the Academy of Science the following year. Subsequently he discovered the planet Neptune. For this he received the grand cross of the Legion of Honor and a professorship in the faculty of sciences at Paris. In 1841 he was elected a member of the general assembly, became senator in 1852, and was director of the observatory of Paris from 1854 until the time of his death, except only the three years from 1870 until 1873.

LEVI (lē'vī), the third son of Jacob and Leah. He is conspicuous in Jewish history on account of joining his brother Simeon in the massacre of the inhabitants of Shechem, for which Jacob pronounced the curse that they should be scattered among Israel. No territory was given to the Levites, who were set apart for the priestly office, enjoying privileges and dignities above the other tribes. The house of Levi was divided into three families, as descendants from Levi's sons, Gershon, Kohath, and Merari. This tribe included Moses and Aaron. In the time of David the Levites numbered 38,000.

LÉVIS (lȧ-vē'), or **Point Levi,** a city of Quebec, capital of Lévis County, on the Saint Lawrence River, opposite Quebec. It is on the Canadian National and the Quebec Central railways, has extensive docks, and is connected with Quebec by one of the largest cantilever bridges in the world. The chief buildings include the county courthouse, the high school, and many fine churches. Among the manufactures are woolen goods, boots and shoes, fertilizer, machinery, and soap. It has a large domestic and foreign trade. The place was settled in 1647 and incorporated in 1861. Population, 1901, 7,783; in 1921, 10,470.

LEVITES (lē'vīts), the descendants of Levi, who were selected as the guardians of the sanctuary of Israel and ministers of worship. When the lands of Palestine were divided, the three divisions of Levites, the descendants of the three sons of Levi, Gershon, Kohath, and Merari, received no territorial possession, but were given tithes of the agricultural products. There were properly two classes of Levites, the entire tribe considered collectively, and those who were designated the sons of Aaron. Forty-eight cities of Canaan were assigned to the tribe of Levi, of which the priests were to occupy thirteen. The duty of preserving and interpreting the law was assigned to the Levites in connection with their other duties, and at the feast of tabernacles they were to read the law before the people once every seventh year. They lost their importance after the revolt of the ten tribes, but their lineage has been kept up more distinctly than that of any other, and even to the present time there are those who claim to be pure descendants from Aaron.

LEVITICUS (lē-vĭt'ĭ-kŭs), the third book of the Old Testament. It contains the laws and regulations concerning the Levites and the ceremonials of worship. The offering of sacrifices, the distinction of things clean and unclean, the consecration and authority of priests, the feast of atonement, the sabbatical and jubilee years, and the prohibition of theft, perjury, and idolatry are treated in the book. It is of Mosaic origin.

LEWES (lū'ĭs), **George Henry,** author, born in London, England, April 18, 1817; died Nov. 30, 1878. He studied philosophy and psychology in England and Germany and took up his residence in London, in 1840, to devote himself to literature. His first writings were contributed to magazines, and for five years he was literary editor of *The Leader*. In 1854 he became associated with Marian Evans (George Eliot), with whom he lived as the common law husband. His writings include "Life of Goethe," "History of Philosophy," "Physiology of Common Life," 'On Actors and the Art of Acting," "Comte's Philosophy of the Sciences," and "Biographical History of Philosophy from Thales to Comte."

LEWIS, Charles B., author, born in Ohio in 1842. He graduated at the Michigan Agricultural College and engaged for newspaper work with the *Detroit Free Press,* in which he published humorous and descriptive sketches under the nom de plume of *M. Quad.* Subsequently he settled in Brooklyn, N. Y., and devoted his attention to book and magazine work. Besides publishing a number of plays, he wrote "The Lime-Kiln Club," "Field, Fort, and Fleet," "Sawed-off Sketches," "Mr. and Mrs. Bowser," "A Sketch of the Civil War," and "Quad's Odds." He died Aug. 21, 1924.

LEWIS, Meriwether, explorer, born near Charlottesville, Va., Aug. 18, 1774; suicided near Nashville, Tenn., Oct. 11, 1809. After attending an elementary school, he volunteered his services in the militia and in 1794 took part in suppressing the Whisky Insurrection in western Pennsylvania. In 1800 he was promoted to the rank of captain in the regular army, but served as private secretary of President Jefferson in 1801-03. Congress appointed him and Capt. William Clark, on the recommendation of President Jefferson, to conduct an exploring expedition to the northwestern portion of the United States. In the latter part of 1803 they entered upon the expedition with a company of 28 men, wintered at the mouth of the Missouri River, and in the spring of 1804 began their ascent of the Missouri in boats.

The second winter was passed at 47° 21′ north latitude among the Mandan Indians, near the present site of Mandan, N. D., and in the spring of 1805 they continued the exploration of the Missouri, which they followed from the confluence of the Milk River to Red Rock Lake, in the southwestern part of Montana. Procuring horses and a guide from the Shoshone Indians, they crossed the mountains westward, and in October reached a tributary of the Columbia, which they descended in canoes, and on November 15 they reached the mouth of the Columbia. The distance traveled was something over 8,000 miles. In their course they came in contact with Indians that never before had been met by white men, collected valuable data, and were the first to reach the Pacific by a tour across the northern part of the United States. The winter was spent on the Columbia.

In the spring they started on a return tour, reaching the Missouri in the summer and the Mississippi in September, 1806. After arriving at Washington, D. C., extensive reports were published of the expedition and its results, which attracted much attention and gave the people of America a clear idea of the vastness of the Louisiana Purchase. The members of the expedition were liberally rewarded by grants of land. Lewis was made Governor of Missouri Territory, in which position he served until 1809, when his mind became weakened as a result of the change from his former activities to curtailment in office work. It was the direct cause of his death. His travels are recounted in Jefferson's *Message from the President of the United States, Communicating the Discoveries Made in Exploring the Missouri, the Red River and the Washita,* Coues's "History of the Expedition Under Lewis and Clark," and Brooks's "First Across the Continent."

LEWIS AND CLARK EXPOSITION, an international exposition held at Portland, Ore., to celebrate the centennial of the exploration of the Oregon country by Lewis and Clark. The gates were opened June 1, 1905, and closed Oct. 15, 1905, a period of 137 days. In point of attendance it ranks fourth among American expositions, being exceeded only by those held at Chicago, Saint Louis, and Buffalo, and the large receipts made it a financial success. Official reports place the attendance at 2,545,509. The exposition represented an expenditure of $7,500,000, of which Portland contributed $400,000 and

Oregon $450,000. The cost and dimensions of the principal buildings were as follows:

	DIMENSIONS, FEET.	COST.
Forestry Building	206x100	$30,165
Oriental Exhibits Building	308x160	55,425
Agricultural Building	460x210	69,130
European Exhibits Building	462x100	51,720
Machinery, Electricity, and Transportation Building	500x100	28,540
Festival Hall (Auditorium)	108x120	12,534
Mines and Metallurgy Building	200x100	14,320
Arts and Varied Industries Building	240x375	38,216
Fine Arts	*25x175x150	10,000

*L-shaped.

LEWISTON (lū'ĭs-tŭn), a city of Idaho, county seat of Nez Perce County, on the Snake and Clearwater rivers, 113 miles south by east of Spokane, Wash. It is on the Union Pacific, the Northern Pacific, and other railroads, and is surrounded by a productive agricultural and mining country. The industries include flouring mills, grain elevators, and sawmills. It has a growing trade in live stock, fruit, and merchandise. Waterworks and electric lighting are among the public facilities. It is the seat of the State normal school and maintains fine public schools. On the opposite side of the Snake River is the town of Clarkston, Wash., with which it is connected by a steel bridge. Population, 1920, 6,574.

LEWISTON, a city of Maine, in Androscoggin County, on the Androscoggin River, opposite Auburn, 35 miles north of Portland. It is on the Maine Central and the Grand Trunk railroads and several electric interurban railways. The noteworthy buildings include the townhall, the public library, and Bates College. The last named institution was founded in 1863 and endowed by Benjamin E. Bates and others. It has a fine public park and an auditorium. The river has a fall of about fifty feet, by which immense water power is secured through a canal as a means to promote industrial enterprises. The manufactures include cotton and woolen goods, clothing, machinery, leather products, belts, hats, brooms, and utensils. The surrounding country is agricultural, giving the city an important trade in cereals and live stock. It was settled in 1770, when it became known as the Plantation of Lewiston, and was incorporated in 1795. Population, 1900, 23,761; in 1920, 31,791.

LEWISTON, a village of New York, in Niagara County, on the Niagara River and the New York Central Railroad. It is the terminus of navigation on Lake Ontario and is visited regularly by steamers from Toronto. It has a public library, and is visited by tourists during the summer months. The French located a blockhouse on its site in 1720. In 1814 it was occupied by the Americans under General Riall, who was defeated by a force of British and Indians under Colonel Tucker, and the place was burned. Population, 1905, 708; in 1920, 723.

LEXINGTON (lĕks'ĭng-tŭn), a city in Kentucky, county seat of Fayette County, twenty miles southeast of Frankfort. It is on the Southern, the Queen and Crescent, the Chesapeake and Ohio, the Louisville and Nashville, and other railroads. The city is situated in the celebrated blue grass region, has well-paved streets, modern municipal improvements, and is the center of a large commercial trade. Among the noteworthy buildings are the Hamilton College, the Transylvania College, the Sayre College, St. Catherine's Academy, the State Agricultural and Mechanical College, the Kentucky Reform School, and the University of Kentucky. It has a fine public library, a commodious high school, and Woodland Park. The manufactures include cordage, flour, copper products, saddlery, hemp and cotton goods, clothing, medicines and machinery. It has a large trade in merchandise, leaf tobacco, cereals, and fine stock. A fine monument to Henry Clay is among the interesting structures that adorn the city. It was first settled in 1779, was incorporated in 1782, and was the capital of Kentucky from 1792 until 1793. Population, 1900, 26,369; in 1920, 41,534.

LEXINGTON, a town of Middlesex County, Massachusetts, ten miles northwest of Boston, on the Boston and Maine Railroad. It is celebrated as the site of the first battle of the Revolution, which occurred here April 19, 1775. The British had secretly dispatched a force from Boston to seize the military stores collected at Concord, the news of which was spread by Paul Revere. Accordingly, the call to arms was sounded and the militia was armed. When Major Pitcairn reached the village with British troops he found minutemen drawn up on the green. Finding that they refused to disperse at his command, he promptly ordered his men to charge, but the militia held its ground until the British were reënforced, when they fell back and Major Pitcairn moved on to Concord. On returning from Concord, the British were attacked at Lexington and pursued by a galling fire from all sides. Exhausted by their march of eighteen miles and their fast of fourteen hours, the British fell into a disorderly flight and would probably have been destroyed, if Lord Percy had not come forward with heavy reënforcements from Boston. The British lost 273 men, the Americans lost 93 men. This engagement so aroused the colonists that within a week 16,000 men were besieging General Gage in Boston. Lexington contains a monument erected in 1799 to commemorate the battle. Population, 1905, 4,530; in 1925, 7,785.

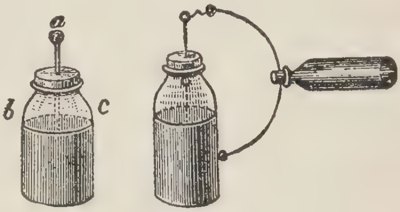
LEXINGTON, county seat of Lafayette County, Missouri, on the Missouri River, forty miles east of Kansas City. It is on the Missouri Pacific and the Atchison, Topeka and Santa Fé railroads. The principal buildings include the public library and museum, the Central College, and the Wentworth Military Institute. Large quantities of coal and farm products are obtained in the surrounding country. It has manufactures of textiles, bread, clothing, and machinery. The place was first settled in 1825 and incorporated in 1830. At the time of the Civil War, in 1861, it was the scene of several engagements between the Federals under Colonel Mulligan and the Confederates under General Price. Population, 1920, 4,695.

LEXINGTON, county seat of Rockbridge County, Virginia, on the North River, in a fertile agricultural and stock-raising country. It is on the Baltimore and Ohio and the Chesapeake and Ohio railroads and is the western terminus of the James River and Kanawha Canal. The manufactures include flour, machinery, and ironware. Besides a good public school system, it has the Washington and Lee University and the Virginia Military Institute. It is historic because of being the burial place of Thomas J. Jackson and Robert E. Lee, the two most distinguished generals of the Confederate army. Population, 1900, 3,203; in 1920, 2,870.

LEYDEN (lī′dẹn), or **Leiden,** a city of Holland, on the Old Rhine River, 22 miles southwest of Amsterdam. It is the oldest city in Holland. In 1640 it had a population of 100,000, but gradually declined until the beginning of the last century. Since then the city has gained considerably in population and importance. It has manufactures of cotton and woolen goods, earthenware, machinery, clothing, and musical instruments. The noteworthy buildings include the Church of Saint Peter, the townhall, the municipal museum, the union railway station, and the public library. It is the seat of the University of Leyden, founded in 1575, which has a fine library and 975 students. The municipal facilities are modern, including electric lights and street railways, stone and asphalt pavements, and systems of sewerage and waterworks. The colony at Plymouth, Mass., was founded by the Pilgrims, who sailed from Leyden. Population, 1922, 58,221.

LEYDEN, Lucas Van, painter and engraver, born in Leyden, Holland, in 1494; died in 1533. He first studied under his father and later entered the school of Cornelius Engelbrechtsen, a painter of Leyden. When only twelve years of age, he painted a celebrated portrait of Saint Hubert. In 1508 he completed his "Mahomet and the Monk Sergius," and subsequently devoted attention to painting and engraving in various lines. The productions of Leyden are considered of much value for the reason that they possess remarkable clearness and delicacy of color, while the expression is uniformly beautiful. Besides painting many events in sacred history, his works show incidents of his time and include portraits of noted men.

LEYDEN JAR, an electric accumulator introduced in 1746 by Musschenbroek of Leyden, Holland. It is constructed by coating the inside and outside of a glass jar with tin foil, for about two-thirds of the height, as shown in the accompanying illustration at *b* and *c*. The inside coating is connected with a metallic rod, *a*, having a brass knob at the top. To charge the jar the knob is brought near the conductor of an electric machine, and a number of sparks are passed into the jar. The inside coating is charged positively and the outside negatively, and, if one hand be placed on the outer coating and the other on the knob, a discharge passes through the body and gives a more or less severe shock. Several jars connected with one another, having their inner and outer coatings respectively in contact, constitute a battery of Leyden. In such a battery it is possible to collect a quantity of electricity equal to the sum of the charges from each jar, which may be passed through a number of persons joined hand to hand, while by a very large battery it is possible to melt metallic wires, rupture bad conductors, and otherwise utilize its force.



LEYDEN JAR.

LEYS (līs), **Jean Auguste Henri,** Flemish painter, born in Antwerp, Belgium, Feb. 18, 1815; died there Aug. 26, 1869. After securing a liberal education, he produced many works of art of such excellent merit that he may be regarded a type of modern Flemish masters. His productions are largely historical, representing scenes from the history of his own country, and exhibiting a beauty of coloring and studied outline which are rarely excelled. Leopold I. made him a baron in 1862. His best paintings include "Faust and Wagner," "The New Year in Flanders," "Albert Dürer at Antwerp," and "Faust and Margaret."

LHASSA (hläs′sä), or **Lassa,** the capital and principal city of Tibet, on the Upper Brahmaputra River, surrounded by elevated mountain ranges. It has been held sacred by the Buddhists for many centuries, is a commercial center of considerable magnitude, and has a diversity of manufactures. It is the seat of several noted monastic establishments, to which people from Tibet and Mongolia are attracted in great numbers. Formerly it was walled and fortified, but the fortifications were destroyed by the Chinese in 1742. The inhabitants include, beside the native Tibetans, many Chinese, Hindus, and Arabs. Population, 1922, 42,575.

LIANA (lī-ā′nȧ), or **Liane,** the name applied by French travelers to a large variety of twining and climbing plants of tropical forests, but now commonly used by travelers of all nations. Most lianas have woody, ropelike stems and climb to the tops of trees, but sometimes run very far along the ground. Some species, such as the clematis and honeysuckle, are found in colder climates. In many tropical countries, where rainfall is unusually large, the lianas grow to the tops of the highest trees, often entwining the trunks with such force as to suppress life, and in other instances bearing heavily upon the branches, even breaking down large trees by their heavy vines and foliage. In some localities a dense network is formed among the forest trees, making it almost impossible to penetrate them without cutting passages, while animals keep open narrow paths by continuous use, or pass from bough to bough along the heavier vines. Many species bear beautiful flowers, others possess medicinal properties, while some are used in the manufacture of baskets and small wooden ware. The Amazon valley of South America, the lake region of Africa, and tropical Asia present notable districts in which lianas thrive.

LIAS (lī′as), in geology, a formation situated at the base of the Jurassic or Oölitic deposits. It consists principally of thin beds of blue or gray limestone, becoming light brown when exposed. The Lias formations contain abundant marine fossils, among them those of fishes, reptiles, and mollusks. They are likewise rich in numerous remains of plants.

LIBAU (lē′bou), a fortified city of Latvia, on the Baltic Sea, in the province of Courland. It has well-improved streets, a naval school, a public library, and several hospitals and gymnasia. The manufactures include furniture, flour, machinery, and clothing. It has a large domestic and export trade in petroleum, cereals, and live stock. The Germans captured it in 1915, together with its great gun and ammunition factories and ship building yards. Population, 1922, 81,450.

LIBBY PRISON, a large building formerly located in Richmond, Va., used as a Confederate military prison during the Civil War. Prior to that time it served as a tobacco warehouse and was so named from the owner. The first prisoners were confined there after the first Battle of Bull Run and at times it contained 1,200 prisoners. In 1864 a tunnel about fifty feet long was excavated by the prisoners, when 109 of those confined made their escape, but half of them were recaptured before they reached the Federal lines. The structure was taken apart and removed to Chicago in 1888 and was there opened as a museum. Later it was taken down for its material.

LIBEL (lī′bĕl), the act of making an attack in writing, printing, or by signs, upon the character or reputation of another. It differs from slander, in that the latter constitutes a similar injury by spoken words. While liberty of speech and the press is recognized in all the states, both are restricted to an extent whereby the good name and character of all are protected. If statements that are true as an entirety be published against an individual, the act of publication is justifiable. However, in some states it has been held necessary to show that the publication was made for justifiable reasons and with good motives. Several important cases for libel were brought in the United States against a number of prominent publishers of newspapers, including Joseph Pulitzer of the New York *World,* in 1909, owing to charges of irregularities on the part of President Roosevelt and others in connection with the Panama Canal.

LIBERAL REPUBLICAN, a party which left the regularly organized Republican party in the presidential campaign of 1872. It declared in favor of tariff reform, civil service reform, universal amnesty and suffrage, and absolute opposition to Kuklux Klan disorders. Carl Shurz and other Republicans of Missouri were the first leaders in the movement. The party united with the Democrats in supporting Horace Greeley for the Presidency. Subsequently they reunited quite generally with the Republicans.

LIBERALS, those who advocate progressive views in politics, and who, through agitation and legislation, seek to secure a more liberal application of the principles of democracy in government. Political parties who make liberalism the basis of action are well organized in the leading countries of Europe. The Liberal party in Great Britain is usually the minority party in England, but generally has a majority vote in Wales and Scotland. It is the lineal successor of the Whigs and had its greatest modern champion in W. E. Gladstone, who, in 1886, incorporated the purchase of land through government aid and the Irish Home Rule bill as party tenets. This led to the formation of the Liberal Union party. The Liberals were out of power until 1906, when, under the leadership of Campbell-Bannerman, they gained a great victory on the issue of free trade. The Liberals are opposed to the Conservatives. The Radicals, although a branch of the former, demand more radical and sweeping reforms.

LIBERAL UNIONIST, a party formed in England in 1886, under the leadership of the Marquis of Hartington, in opposition to the policy of Gladstone. It was designed by the latter that the lands in Ireland be purchased and ultimately owned by the tenants, which the Liberal Unionists opposed, and the movement likewise contended against Home Rule. The party was represented by leagues in all parts of Great Britain. It supported about 250 branch organizations, elected 94 members to Parliament, and subsequently merged into the Conservative party.

LIBERIA (lī-bē′rĭ-ȧ), a republic of Africa, on the northern coast of the Gulf of Guinea, extending northeast from Cape Palmas. The southeastern boundary is formed by the Cavally River and the northwestern by the Manua River. It extends inland from the coast a distance of about 250 miles. The coast line is 400 miles long. It has an area of about 35,000 square miles. The republic was formed in 1821 by liberated slaves from America, who at present number about 60,000, including American descendants, and the independence of the country was recognized by the United States and other governments in 1847. The government is under a constitution modeled after that of the United States. Under it the executive authority is vested in a president, who is elected for two years. He has the assistance of a cabinet, including the departments of state, justice, interior, finance, war, marine, and ports.

The legislative power is vested in a congress of two branches, the senate and the house of representatives. The former consists of eight senators, who are elected for four years, and the house of representatives is constituted of fourteen members, these being elected for two years. No standing army is maintained, but all able-bodied male citizens are members of the militia and are liable to be called upon when necessary. The government maintains a number of small gunboats. Slavery is prohibited, religious worship is entirely free, internal improvements are encouraged, and a system of elementary schools are supported by taxation. Many of the natives have little advancement in educational arts, but in the main the republic has not been a disappointment. Its influence has been extending locally. In 1899 there was some discussion of a protectorate by the United States, Germany, and Great Britain, under which it was hoped to increase native obedience to law, and intercept the encroachment of the French upon its territory. However, the republic is still entirely free from European claimants.

The coast regions of Liberia form an undulating plain, but through the interior are mountain ranges, with considerable elevations in the northern part. It is drained by numerous streams, possesses fertility of soil, and has some valuable mineral deposits, though mining has not been developed extensively. The principal exports include sugar, coffee, palm kernels and oil, cocoa, ivory, rubber, and hides. Hardware, earthenware, cotton goods, machinery, and utensils are imported. The import trade is chiefly with Germany, but there are growing commercial relations with the United States, Great Britain, Holland, and France. Monrovia is the capital and principal seaport. Other cities are Buchanan, Edina, Harper, and Robertsport. Population, 1922, 1,840,500.

LIBERTY, Statue of, a celebrated bronze statue in the harbor of New York City, located on Bedloe's Island. It was executed by Felix Bartholdi, a French sculptor, and presented by the people of France to the United States to commemorate the 100th anniversary of its independence. It was placed in position in 1885 and was dedicated the following year. It is the highest statue in the world, being 306 feet above mean tide. The female figure, from the base to the top of the head, is 111 feet high, and to the top of the torch, 151.41 feet. The inside of the head, in which forty persons can stand, is reached by a stairway within the statue, and a branch staircase extends for some distance up the right arm. An electric light is in the torch. The statue is known as Liberty Enlightening the World.

LIBERTY BELL, a famous bell of the United States. It formerly hung in Independence Hall, Philadelphia, Pa., and rang as the news of the signing of the Declaration of Independence was made known on July 4, 1776. It was brought from England in 1752, but was twice recast in 1753 because of becoming cracked. In 1835, while being tolled in memory of Chief Justice Marshall, it was again cracked. It has been exhibited at several expositions, but is kept at Independence Hall, Philadelphia. The bell has the inscription, "Proclaim liberty throughout all the land, unto all the inhabitants thereof" (Lev. xxv., 10).

LIBERTY PARTY, a political organization of the United States, formed in 1839 to oppose slavery. Though it did not attain a large membership, it effected much in the way of forming public opinion. Among its members were such eminent men as Salmon P. Chase, Louis Tappan, and Samuel Lewis. James G. Birney was its candidate for President in 1840, receiving 7,059 votes. He was likewise its presidential candidate in 1844, when he received 62,300 votes. John P. Hale was nominated for President in 1848, but he withdrew when Martin Van Buren was nominated for the same office by the Free Soil party, which ultimately absorbed the Liberty party.

LIBRA (lī'brȧ). See **Zodiac.**

LIBRARY (lī'brȧ-ry̆), a term used to designate a collection of books and pamphlets kept for reading and consultation, and to describe a building containing such a collection. The different classes of libraries include such collections of individuals, municipalities, public and parochial schools, higher institutions of learning, and those of states and nations. In treating this subject particular attention is directed by most writers to the larger public libraries, but it is certain that private libraries are by far the most numerous and as a whole constitute collections of books and manuscripts representing a comparatively large value. However, statistics relating to private collections are not generally available and many of such libraries, either in whole or in part, are merged from time to time with public collections.

History. The earliest public library of which we have any knowledge was founded by the Assyrians in the 8th century B. C., but it is known that libraries were maintained in Babylon, Egypt, and other ancient countries at a very early date. According to Strabo, the first pri-

(Opp. 1582) LIBRARY OF CONGRESS, WASHINGTON, D. C.

vate library was that of Aristotle, in the year 334 B. C., but public libraries existed from times much earlier. A public library was founded at Athens about 540 B. C. by Pisistratus. The celebrated Alexandrian library, established about 298 B. C. by Ptolemy I., was greatly damaged in the Egyptian campaign of Caesar, in 47 B. C., and was finally destroyed in 640 A. D. by Caliph Omar. The libraries established under the ancient civilizations, though voluminous, differed largely from those of the present in that printing had not been invented. At that time writings of the different classes were preserved by inscriptions on skins, papyrus, and stone. In Persia, at the time of its greatest prosperity, vast libraries were established. The Hebrews likewise exercised much care in the collection of books in secure archives.

The King of Pergamus, Eumenes II., established a library of 200,000 volumes, which passed to the care of Eumenes III., and later this collection came into the possession of Mark Antony, who transported it to Alexandria as a present to Cleopatra. Julius Caesar was particularly anxious to build up a vast public library containing all the more valuable works of Greek and Latin writers, but his early death left the project to be carried out by Octavianus Caesar. The two libraries established by the latter were the Palatine and the Octavian, the former existing up to the time of Pope Gregory I., but these and other libraries suffered extensively by the invasion of the Huns, Goths, Vandals, and other semibarbaric tribes, much of their contents being mutilated or destroyed in the conflicts of war. Constantine collected a vast number of books devoted to Christianity that had been preserved notwithstanding the spirit of unrest during the period of persecution under Diocletian. This library, being enlarged at different times, included fully 120,000 volumes, but in the 8th century a large part of it was destroyed. However, many valuable books and other writings of the ancient libraries have been preserved. It is in this way that former civilizations contribute to the extension of knowledge and culture, since all succeeding generations draw upon the experiences and writings of scholars who labored in the past. The civilized countries of all the grand divisions have libraries of a greater or less number of volumes. Additions are made to these collections from time to time as the communities develop and new discoveries are made in the arts and sciences.

FRENCH. The Bibliothèque Nationale at Paris, France, is at present the largest library in the world. It was instituted in the reign of King John and since then has been enlarged from time to time. Although an exact count has not been made since 1791, the number of books is placed at 3,500,000 volumes. It likewise has many manuscripts and pamphlets. France is noted for its numerous libraries, both public and private. The public libraries belong largely to learned societies, educational institutions, and the state. Libraries of more or less value are attached to all the public schools, being maintained by public taxation. Paris has a number of other libraries, aside from the great national library, such as the Arsenal, the Mazarin, and the Library of Sainte Geneviève. Other noteworthy collections are located in Rouen, Lyons, and Bordeaux.

GERMAN. German-speaking countries, including Germany, Switzerland, the Netherlands, and large parts of Austria, Belgium, and Russia, are noted for their many large libraries, in which respect they stand first among European countries. The want of political unity of various cities and provinces has made this condition possible. In Germany proper are several thousand excellent libraries, all of which are open to the public for study and research. The most important of these include the national library at Berlin with 1,000,000 volumes; Breslau, 400,000; Darmstadt, 400,000; Dresden, 400,000; Heidelberg, 350,000; Leipzig, 750,000; Munich, 1,200,000; Strassburg, 525,000; Stuttgart, 450,000; Tübingen, 250,000; and Würtzburg, 300,000. Those of Austria are not so numerous, but likewise represent a vast value, the largest being in Vienna, where the national library has 500,000 volumes. The most noted library of Switzerland is the one at Basel, having 150,000 volumes; in Belgium, the Brussels library has 375,000 volumes; in Holland, the library of The Hague has 225,000 volumes.

BRITISH. The libraries of Great Britain include those of the United Kingdom and the colonies. Attention was first given to the collection of vast libraries in England in the 17th century, since which time they have steadily increased in size and value. The most extensive library of Great Britain is the one in connection with the British Museum, which contains 1,500,000 volumes of books, 50,000 manuscripts, and 45,000 charters. Other noted libraries include the one at Cambridge University with 225,000 volumes; Edinburgh, 275,000 volumes; Bodleian Library, Oxford, 500,000 volumes; Glasgow, 130,000 volumes; Trinity College, Dublin, 200,000 volumes; and Birmingham, 115,000 volumes. At present the most extensive libraries in British colonies are in Australia and Canada, but there are many fine collections in India. The largest of Australia is at Melbourne, containing 125,500 volumes, and of Canada is at Ottawa, having 220,500 volumes.

OTHER COUNTRIES. The libraries of Italy are especially valuable in that they contain many rare manuscripts of antiquity and products of Italian masters. Among the extensive collections are the Florence library with 425,000 volumes; the Vatican library at Rome, 250,000 volumes; Padua, 160,000 volumes; and Venice, 275,000 volumes. The largest library of Denmark is at Copenhagen, having 500,000 volumes; the largest of Sweden, at Stockholm, with 275,000 volumes; the largest of Spain, at Madrid, with 425,000 volumes; the largest of Russia, at Saint Petersburg, with 1,200,000 volumes; the largest of Greece, at Athens, with 155,000 volumes; the largest of China, at Shanghai, with 15,000 volumes; and the largest of Japan, at Tokio, with 75,000 volumes.

United States. The library movement began in the United States at an early period by gifts of philanthropists and government aid, but its most potent impetus was not reached until the middle of the last century, since which time rapid strides have been made. Besides many private libraries of much value, there are fully 4,500 public libraries that contain 1,000 volumes and upward, and these now aggregate 40,000,000 volumes. The congressional library building at Washington is the finest structure of the kind in the world. It contains ample accommodation for 4,500,000 volumes, but at present it has 2,500,000 books and about 250,000 pamphlets and manuscripts. Other great libraries include the large library of San Francisco, which has 815,000 volumes; Yale College, 1,250,000; Chicago public library, 1,175,000; University of Chicago, 1,200,000; Annapolis, 825,000; Peabody Institute, 520,000; Boston Athenaeum, 390,000; Harvard University, 2,215,000; public library, Boston, 750,000; Detroit public library, 615,000; Albany State library, 465,000; Brooklyn, 980,000; Pittsburg library, 800,000; Columbia University, 1,250,000; New York Mercantile, 435,000; Cincinnati public library, 350,000; Philadelphia Library Company, 680,000; Philadelphia mercantile library, 275,000; University of Pennsylvania, 840,000; and Saint Louis library, 750,000. School libraries are supported by taxation in many of the states, a system under which library privileges have been carried not only to the smaller towns, but likewise to many rural districts. Solomon's adage, that "Of making many books there is no end," is emphasized with remarkable accuracy at the present time.

LIBRARY OF CONGRESS, the national library of the United States, an institution at Washington, D. C., established in 1800. It contains the largest collection of printed books and pamphlets in the Western Hemisphere, about 3,450,000 copies, besides 99,800 manuscripts, 64,980 maps, and 348,650 pieces of music. The building has a floor space of nearly 8 acres. The book racks have about 45 miles of shelving and the accommodations are sufficient to house about 4,500,000 volumes of books. It is located on a site of 10 acres, about 1,250 feet east of the capitol, and was completed in 1897 at a cost of $6,347,000, exclusive of the land, which cost $585,000.

The number of employees at the library is 450, of whom 68 are in the copyright department, 127 attend the disbursement and grounds, and 255 are engaged in the library proper. Admission to the building is free and the doors are open from 9 A. M. to 10 P. M. week days, except legal holidays, and from 2 P. M. to 10 P. M on Sundays. The library is maintained by annual appropriations by Congress for various purposes, including the purchase of books.

LICENSE (lī′sens), in law, a document conferring a permission to do some act which would otherwise be unlawful. The object of issuing licenses is two-fold; that is, to raise revenue and to regulate the prosecution of certain trades and professions. The manufacture and sale of tobacco and intoxicating liquors are usually regulated by the issuance of a license, and this is true likewise of peddling and the management of theaters and other places of amusement. The Prohibition party, a political organization of the United States, is opposed to the issuance of licenses which authorize the sale of alcoholic beverages. Those who advocate a *low license* seek to raise revenue without the view of regulating the traffic, while those favoring a *high license* aim to obtain revenue as well as regulation of the liquor traffic. A license is required in many special cases, such as those necessary before marriages may be solemnized, but they are issued so as to maintain a record and prevent the marriage of persons who are not legally qualified to enter into such a contract, and the element of revenue is eliminated.

LICHEN (lī′kĕn), an order of flowerless or cryptogamous plants. All plants are classified as belonging to the *flowering* or the *flowerless* division, lichens being included with the latter. They are found native in all zones up to the snow line. These plants are composed of loose cellular tissue, a slender white-celled portion now conceded to be a parasitic fungus, and a number of globular greenish or bluish cells upon which the fungus cells prey. They contain neither stems nor leaves, but form gray, brown, or yellowish crustlike patches on trees, fence rails, rocks, and the ground, but derive their nourishment entirely from the air. In the most northern portions of the Arctic regions to which any form of vegetation exists, they constitute important means for sustaining animal life, especially the reindeer. *Iceland moss,*

ICELAND MOSS. REINDEER MOSS.

a kind of lichen found in the Arctic region of both hemispheres, yields dyes and contains medical properties. Some species furnish a nutritious jelly and other forms of food.

LICHTENBERG (lĭk'tẹn-bĕrk), a city of Germany, in the province of Brandenburg, within the limits of Berlin, the national capital. It is practically a part of Berlin, being popular as a residential center, but has had a separate city government since 1907. The place has extensive communication by steam and electric railways. Many of the streets are paved with stone and asphalt, but the larger number are macadamized. The chief buildings include the city hall, the central railway station, an insane asylum, and many churches. It has a large trade and manufactures of clothing, chemicals, and machinery. A large majority of the inhabitants are Protestants. Population, 1922, 55,391.

LICK, James, philanthropist, born in Fredericksburg, Pa., Aug. 25, 1796; died Oct. 1, 1876. After securing an education, he spent a number of years in South America, and in 1847 settled in California, where he became immensely rich. Besides supporting many local enterprises with much liberality, he donated property as follows: $60,000 to erect a monument in Golden Gate Park to Francis Scott Key; $100,000 to found an old ladies' home in San Francisco; $100,000 for a bronze statuary to be erected at the city hall of San Francisco; $150,000 for the construction and support of public baths in San Francisco; $540,000 to establish the California School of Mechanical Arts; and $700,000 to build the Lick Observatory of the University of California.

LICK OBSERVATORY, an institution of the University of California, built with a fund given by James Lick. It is situated 25 miles east of San José, Cal., on one of the summits of Mount Hamilton, and contains an object glass of 36 inches in aperture. In making the gift it was provided that the instrument "should be superior to and more powerful than any telescope ever made." It is now surpassed in size only by the telescope at the Yerkes Observatory, near Chicago, in which the objective lens has an aperture of 40 inches. The remains of Lick were placed in the vault at the base of the 30-foot pier that supports the great telescope.

LICORICE (lĭk'ô-rĭs), or **Liquorice,** a class of leguminous plants found in Europe, Asia, and Africa. They are cultivated for the juices found in the roots, which serve in preparing a medicine of value in the treatment of throat and catarrhal diseases. The plants include several species, attain a height of about four feet, bear violet-colored flowers, and have roots growing about three feet into the ground. Their leaves are alternate and pinnate, and the plants have few branches. The juices are pressed from pulp prepared by crushing the roots of plants having at least three years' growth, the liquid portions are evaporated by heating, and the solid parts are made into sticks, such as are commonly purchased in the market. They are packed for shipment with bay leaves. The medicinal qualities arise from the property of the licorice in aiding expectoration and its healing influence upon the irritated portions of the mucous membrane. Licorice in a pure state has decided medical virtues, but there are many adulterations. The only species of licorice found in America is a plant known as *Glycyrrhiza lepidota,* which thrives in portions of the Mississippi valley, especially in Missouri.

LICTOR (lĭk'tŏr), in Rome, a public officer appointed to attend upon the chief magistrates. The ancient kings were always preceded by twelve lictors, who bore the *fasces,* or a bundle of rods with an ax. The rank of the magistrates determined the number of lictors. A praetor had two; a propraetor, six; a consul, twelve; and a dictator, twenty-four. The lictors inflicted punishment on condemned Roman citizens.

LIDDON (lĭd'dŭn), **Henry Parry,** clergyman, born in Stoneham, England, Aug. 20, 1829; died at Weston super Mare, Sept. 9, 1890. He graduated at Oxford in 1850, was ordained clergyman in 1854, and became vice principal of the theological school at Cuddesdon. In 1864-70 he was prebendary of Salisbury Cathedral, in 1870-90 was resident canon of Saint Paul's, London, and later served as professor at Oxford. His ability as a pulpit orator attracted large congregations, thereby exercising marked influence in the Christian work. He published a large number of books relating to Christianity, many of which have had a wide reading. His writings embrace "Divinity of Our Lord and Saviour," "Life of Edward Bouverie Pusey," and "Letters from Egypt and Syria."

LIE (lē), **Jonas Lauritz Edemil,** novelist, born in Eker, Norway, June 11, 1833; died July 6, 1908. He studied at Tromsö, a town and island in Finmark, and subsequently prepared for entrance into the navy, but was not admitted owing to nearsightedness. Later he studied at the town of Kongsvinger and Christiania, and engaged in the practice of law. Subsequently he took up his residence at Christiana and devoted himself entirely to literature and journalism. In 1870 was published his first novel under the title "Visionary," which met with a warm reception and caused the government of Norway to grant him a traveling stipend. From 1891 until 1893 he spent a great deal of time traveling, visiting Rome and other cities of Europe, and his return to Norway was celebrated as a national festival. Among his chief publications are "Tales and Sketches from Norway," "Pilot and His Wife," "The Slave for Life," "The Family at Gilje," "Daughters of the Commodore," "A Maelstrom," and "Eight Stories."

LIEBIG (lē'bĭg), **Justus, Freiherr von,** eminent chemist, born in Darmstadt, Germany, May 12, 1803; died in Munich, April 18, 1873. He studied at Bonn and Erlangen, receiving a degree at the latter in 1822, and subsequently did postgraduate work at Paris. While there he attracted the attention of Alexander von Humboldt by a treatise on the "Fulminates and Fulmic Acid," and in 1824 became professor of chemistry in the University of Giessen, a position in which he labored successfully for 25 years. The efficiency of his work had an influence upon students of chemistry and attracted the attention of scholars in foreign countries as well as all parts of Germany, adding greatly to the reputation of his school.

JUSTUS LIEBIG.

Besides being the accredited founder of organic chemistry, he reformed agricultural arts, introduced the use of sewage of cities for fertilizing the soil, and discovered the preparation of infant food by making extracts of beef. Many distinguished honors were placed upon him, among them a hereditary baronetcy by the Grand Duke of Hesse and recognition by learned societies and universities of America and Europe. In 1852 he became professor at the University of Munich and in 1860 was elected president of the Munich Academy of Sciences. His writings embrace "Dictionary of Chemistry," "Organic Chemistry in Its Application to Agriculture," "Chemical Letters," "Chemistry of Food," and "Annals of Chemistry and Pharmacy." Many of his works have been translated into various languages. His many discoveries are due to his indomitable perseverance and extraordinary power of generalization.

LIECHTENSTEIN (lēk'tẹn-stīn), an independent principality in Europe, which formed a part of the German Confederation until 1866. It is bounded on the northeast and east by the Austrian possession of Vorarlberg, south by the Swiss canton of Grisons, and west by the Rhine River, by which it is separated from the canton of Saint Gall. The area is 65 square miles. Vaduz, or Liechtenstein, is the capital and chief town. The surface is quite mountainous, but generally fertile, and considerable interest is taken in agriculture, fruit growing, stock raising, and mining. The language is German. Several fine schools and institutions of higher learning are maintained. The Prince of Liechtenstein, who has his chief residence in Vienna, is at the head of the government. He is assisted by a diet of fifteen members, three of whom are appointed by the prince and the remainder are elected by the people. It has no standing army and is joined to the customs union of Austria. The Prince of Liechtenstein belongs to the Este family, an old family of Europe, which was raised to sovereign rank in the 17th century. A large majority of the inhabitants are Roman Catholics. Population, 1922, 10,875.

LIÉGE (lê-âzh'), a city of Belgium, capital of the province of Liége, at the confluence of the Meuse and Ourthe rivers. It is surrounded by a rich agricultural and mining country. Many railroads and electric railways center here, giving the city a fine outlet for its large trade. Coal and zinc are mined in the vicinity. The manufactures include machinery, cotton and woolen goods, clothing, locomotives, steam machinery, steamboats, ironware, and furniture. Among the important buildings are the Church of Saint James, the Cathedral of Saint Paul, the municipal theater, the railway station, the Palais de Justice, and the University of Liége. The last named institution has 1,200 students and a library of 200,000 volumes. Other institutions include the museum, the zoölogical and botanical gardens, and many schools and hospitals. The city has modern municipal facilities, including waterworks, sewerage, and electric railways, but contains a number of narrow streets and illy ventilated sections. In 1691 it was conquered by the French, and in 1831 was made a part of Belgium. The city and 40,000 Belgian soldiers surrendered to the Germans in 1914. Population, 1922, 172,039.

LIEGNITZ (lēg'nĭts), a city of Germany, in the province of Silesia, 145 miles southeast of Berlin. It is noted as a commercial and railroad center. The noteworthy buildings include the townhall, the gymnasium, and the Church of Saint John. Among the manufactures are cotton, woolen, and linen goods, musical instruments, hardware, saddlery, and machinery. Liegnitz was the scene of a great battle in 1813, in which the French were defeated by Blücher. This engagement is sometimes called the Battle of the Katzbach. Population, 1920, 66,620.

LIFEBOAT, a boat constructed for special use at sea in times of shipwreck and storms. Lifeboats, to be of the highest utility, must possess extra buoyancy and have means for the self-discharge of water. They must be self-righting, possess speed, have storage room, and be strong of build. In 1785 the first lifeboat was patented by Lukin in Great Britain, but it did not prove of sufficient utility, on account of which a prize was offered for the best model of a new structure. In the contest that followed, in 1789, the premium was awarded to Henry Greathead. However, his invention did not possess the property of righting itself and discharging water, hence it proved unsatisfactory, especially in an accident on the Tyne, in 1849, when a number of persons lost their lives by endeavoring to use this lifeboat in saving persons from drowning. Accordingly, the Duke of Northumberland offered a prize to the person who would supply the best model of a lifeboat. In the competition that followed James Buching was awarded the premium. However, similar boats were constructed in various countries, combining all the necessary elements of a first-class lifeboat, and the credit cannot be claimed by any one country or individual.

LIFE BUOY. See **Buoys.**

LIFE INSURANCE. See **Insurance.**

LIFE-SAVING APPARATUS, the devices designed for the purpose of saving lives in case of shipwreck. Many classes of life-preservers have been introduced at various times, all of which have served a more or less valuable purpose. Those of modern manufacture are of especial value in that they take advantage of many methods demonstrated by experience to be of practical value. Among the different kinds may be mentioned the devices made of India rubber and inflated with air. These are constructed in several compartments with a view of insuring safety if a rupture should occur in one or more of the parts. Lifeboats have been efficient life-preservers, especially since a form of ballasting has been devised by which they right themselves, if they are upset in the water. Mattresses stuffed with cork, jackets of inflated rubber and cork, life buoys, trousers and suits with cork, looped life lines, and many other devices are among the preservers now in use. All ships are provided with a supply of these for the safety of passengers and the crew.

LIFE-SAVING SERVICE, a public system maintained for the purpose of giving succor and assistance to seafarers, when they are subject to danger or shipwreck upon the sea and inland waters. All civilized nations have made provisions whereby the danger of loss of life at sea may be greatly lessened or entirely overcome within certain distances from the land. The life-saving service of the United States is among the most efficient in the world, although it was not established in its present form until 1871. It is under the control of the Treasury Department and a general superintendent, who has several assistants. About 10,000 miles of seacoast have been divided into districts. Besides the life-saving service concerned with the sea, there is a service corps which has charge of the inland waters. In the first thirty years of the operations of this department 16,112 lives were saved by the coast and inland services.

The coast service of both Canada and the United States is divided into a number of districts, each of which has one or more stations. These stations are supplied with life-saving boats and various forms of life-preservers. Experienced surfmen are constantly employed, who patrol a certain beat every night and during foggy days for the purpose of watching for vessels in danger and distress. The house provided for surfmen has a station outlook at the top, from which constant observations are made, and at night lights are displayed. Flare lights are used to indicate that those in danger have been observed. Lifeboats are sent to the points of danger, when a shipwreck occurs, carrying various life-preservers, and in many instances life lines are thrown to the stranded vessel by rocket or mortar. In this way persons in danger may be safely towed to shore, or prevented from sinking until they can be rescued. At each station is an adequate supply of provision and restoratives, by which to minister to the wants of those in need, or restore to consciousness and activity in cases of apparent drowning. Lighthouses located at various shoals and breakers are maintained to guard against dangers and overcome losses at sea.

LIGAMENT (lĭg'ȧ-mẹnt), in anatomy, the short bands of strong, white, glistening fibers by which the bones are connected at the joints. They serve to strengthen the attachments and keep in place various organs. Capsular ligaments surround all the joints, but the structures holding the tendons of the ankle and wrist are called annular ligaments. Distinct names are applied to the many different ligaments in the human body, whereby it is made possible for anatomists to locate and describe them with facility.

LIGHT, the form of radiant energy that acts on the retina of the eye and renders visible the objects from which it comes. It has a heating and chemical action of prime importance to plant and animal life, and neither can exist without its influence. The importance of light upon vegetation is seen by the fact that plants growing in places from which light is partially excluded are abnormal and of little vigor. Animals likewise lose much of their vitality and energy when wanting its influence. It has been shown successfully that sunlight is an important factor in the sanitary regulation of cities. It materially affects the growth of children and the recovery of patients in hospitals, darkness causing failure and even death. The sun is the most important of the self-luminous bodies. Other objects giving out light include fixed stars, certain meteors, nebulae, and bodies in a state of phosphorescence or incandescence, though nearly all of the earth's light comes from the sun.

THEORY. The undulatory theory of light is now generally accepted. According to it, radiant energy is propagated in waves that vary in length, and only those that affect the eye are known as light, the others being regarded as chemical rays or dark heat. Light and energy are transferred from one place to another by means of these waves, and pass with rapidity through the luminiferous ether that fills all space. The velocity of light, according to Foucault, Cornu, and Bradley, is 186,427 miles a second, but the rapidity depends somewhat on the medium through which it passes. To affect the eye and produce the sensation of light, the waves must have a frequency between 392,000,000,000.000 and 757,000,000,000,000 per second, and, since the frequency of the ether waves is so great, their wave lengths must be correspondingly small. Ether waves produce three classes of effects on ordinary matter, called heating effects, luminous effects, and affinic effects. To produce these the waves must be correspondingly rapid, and the molecules of the body must move to and fro with a sufficient frequency, otherwise none of the effects will be manifest. Different bodies are variously affected by rays of light.

Properties. The three most important classes of bodies are called transparent, translucent, and opaque. A *transparent body* is one through which the light passes in such a manner that the outlines of other bodies can be seen through it, as clear glass and water. A *translucent body* permits light to pass through in such a manner that we cannot see through it the outlines of other bodies, such as oiled paper and ground glass. An *opaque body* does not allow any light to pass through it, as wood and iron. A single line of light taken in the direction in which it is moving is called a *ray,* a number of parallel rays constitute a *beam;* and a number of converging or diverging rays form a *pencil.* A pencil is said to be converging, when the rays all move toward the same point, and diverging, when all are moving from the same point. Bodies are not visible unless they throw off light in all directions; therefore, both luminous and illumined bodies are visible. A body that regularly reflects light cannot be seen, as a clear glass placed in a doorway, which may be mistaken for an open doorway. Light, like sound, moves in straight lines, and varies inversely proportional to the square of the distance from the point. This may be demonstrated by placing an object near a light, where it receives the effects more intensely than when removed several times the distance from the luminous object.

Reflection. Light is said to be reflected when a portion of the quantity falling on the surface of a body is thrown off from it. The two recognized laws of reflection are: the angle of reflection is equal to the angle of incidence; and the incident ray, the perpendicular at the point of incident, and the reflected ray, all lie in the same plane. Ordinarily the amount of light reflected depends upon the kind of material forming the surface, on the degree of polish of the surface, and on the angle at which the light strikes the surface. Glass and highly polished metals are excellent reflectors of light, though considerable light is lost even from the surface of the best reflectors. Transparent substances reflect the greater amount of light the more obliquely it falls upon their surfaces, as is the case with glass and water, and when the light falls on such surfaces at nearly right angles most of its quantity passes into or through the body. This is demonstrated clearly by the sun shining at noon on a water surface, when we may look at its image without being dazzled, but shortly before sunset the image becomes quite dazzling and too powerful to be looked at steadily. The reverse is true of opaque bodies, since they reflect the greatest amount of light when it falls the most directly on the surface.

Refraction. When light falls on a water surface, a part of the light is reflected and part of it enters the water. It moves onward in straight lines, both in the air and in the water, as shown in Figure 1, but the direction of the light in the water is not the same as in the air, the light being bent or refracted as it enters the water. Refraction of light always occurs when it passes obliquely from one medium to another of different density, but when it falls perpendicularly on the surface it is not refracted. Refraction may be illustrated by the double-convex lens, as shown in Figure 2. The eye at F sees the candle PQ, not at its actual place or in its real size, but the image at P Q′ is larger and more distant, owing to the bending of the rays. The accepted rules of refraction are: first, the incident ray, perpendicular at the point of incidence, and the refracted ray all lie in the same plane; second, between the same two mediums the value of the index of refraction remains constant, whatever may be the angle of incidence; third, the light is bent or refracted toward the perpendicular at the incident surface, when the ray enters a denser medium, and from the perpendicular, when it enters a rarer medium. *Optics* is the science

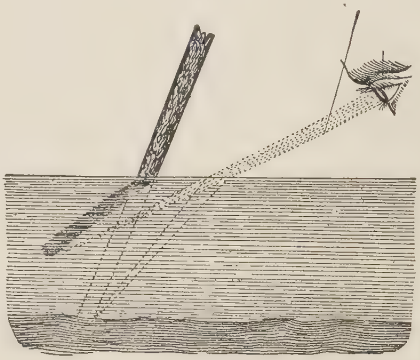


FIGURE 1.

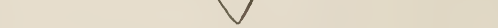


FIGURE 2.

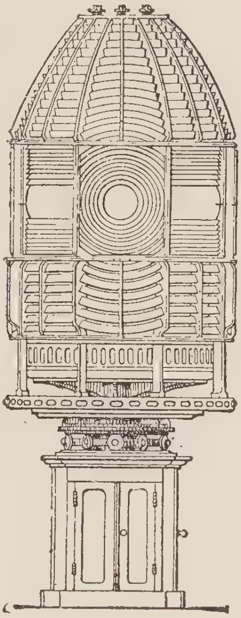
that embraces the application of mathematics to the laws of reflection and refraction. It treats of the formation of images by mirrors and lenses, the eye, cameras, telescopes, microscopes, and other optical instruments.

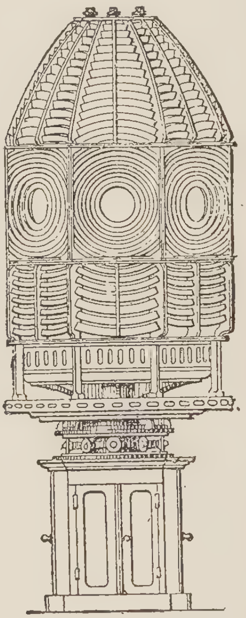
History. It was well known to the ancients that light is propagated in straight lines. They discovered the laws of reflection, a fact attested by an ancient fable, according to which Archimedes set fire to the Roman ships of Syracuse by means of concave mirrors. Kepler discovered the law of the intensity of light. The telescope was invented by the Dutch about 1608, Jensen, Lippersheim, and Metius each claiming the honor, but it is reasonably certain that Galileo perfected it by making a number of improvements. The law of refraction was discovered by Snell in 1621, and by its aid Descartes explained the rainbow. A half century later Newton accidentally discovered the decomposition of light by a sunbeam coming through an opening in the window shutter and, instead of noticing a light spot, he saw the seven colors—violet, indigo, blue, green, yellow, orange, and red. This discovery led to the invention of the spectroscope, an instrument by which rays of light may be decomposed and analyzed, and the body from which the light is emitted may be classified as to its constituents. That the seven principal colors of the solar spectrum produce the white color of light was first demonstrated in the 19th century by painting them on a top and whirling it rapidly, when it was shown that they unite and make a white appearance.

That the different colors of objects depend on the kind of light they reflect is another comparatively recent discovery. Thus, a body reflecting only yellow rays when touched by a beam of light is said to be yellow; when it reflects the green rays, it is said to be green; and, when it reflects none of them, it is called black. Newton was the first to publish an extensive treatise on the decomposition of light. Étienne Louis Malus (1775-1812), in 1808, discovered the elementary phenomena of the polarization of light, by which it was found that a single ray of light may be divided into two rays, and, when so divided, they possess properties not common to ordinary rays of light. In 1896 Roentgen announced the discovery of the X-ray, by which it became possible to pass rays through substances opaque to ordinary light, and to make photographic views of objects in the interior, such as the bones within the living body.

LIGHTALL, William Douw, author, born at Hamilton, Ontario, Dec. 27, 1857. He studied at McGill University, where he graduated in 1879, and subsequently was called to the bar. In 1902 he founded the Union of Canadian Municipalities, of which he was president in 1904. Though holding several municipal positions, he gave much attention to literary work. His publications include "The False Chevalier," "Canada a Modern Nation," "Montreal After 250 Years," and "The False Repenting."

LIGHTHOUSE, an elevated structure or tower placed near a seaport or some headland for the purpose of protecting vessels at night by warning navigators of danger. In some instances such a structure is maintained as a general landmark. The first building of this character of which there is authentic record was erected at Alexandria, Egypt, about 300 B. C., and is reputed to have been elevated 550 feet above the sea. It was built by Ptolemy Philadelphus on a small island named Pharos, and this name was used subsequently to designate various structures of a like character. The most celebrated lighthouse of the present time is situated near the mouth of the Garonne, in France. It has a height of 198 feet and is noted for its excellent architecture. This structure was completed in 1610, but in 1727 many alterations and improvements were made. The first lighthouses were lighted with fires, but those of modern construction are lighted with oil, gas, or electricity, the power of the light being increased by the employment of glass reflectors, lenses, and prisms.


Arrangement of fixed and revolving lights.


Arrangement of an alternating light.

All modern maritime nations have a system of lighthouses on their coasts, and many maintain a similar system to aid in the navigation of interior waters. In Canada this department of the government is under the direction of the Lighthouse Board. The Congress of the United States passed the first act for the establishment of such a system in 1789. In 1852 it authorized a lighthouse board, with the Secretary of the Treasury as ex-officio president. Under this act the coasts of the Atlantic, the Pacific, the Gulf of Mexico, and the Great Lakes were divided into lighthouse districts, each of which was placed under the supervision of an officer of the army or navy as inspector, and the general superintendents became subject to presidential appointment. In 1874 a lighthouse district which includes the Ohio, Missouri, and Mississippi rivers was added, and since then provisions have been made for maintaining lighthouses or signals in the Hawaiian Islands, Guam, and other regions under the jurisdiction of the United States.

Elevated coast points served as convenient situations for early lighthouses, but, since a lighthouse some distance from the shore is more effective, engineers began to plan the construction of the larger lighthouses some distance off the coast. To make them proof against waves and tides, as well as the storms frequent at sea, they must necessarily be built on solid rock, of which the Eddystone Lighthouse (q. v.) is a notable example. Besides, the elevation above sea level is a material factor, since the mariner's eye is able to see the more elevated at greater distances, while the character of the light is likewise material. The principal classes of lights comprise the catoptric, dioptric, revolving, intermittent, and alternate. A *catoptric light* is one in which reflectors are formed into a parabolic curve. The *dioptric light* has a central lamp and the rays are transmitted by bending or diverging them through a combination of lenses. A *revolving light* alternately increases and decreases gradually at equal intervals. An *intermittent light* appears and disappears suddenly, but remains visible when at its brightest stage for some seconds. The *alternating light* throws out different colors, such as red and white, at equal intervals. In most countries, as in Canada and the United States, the lighthouse service includes electric and gas buoys, fog signals, whistling buoys, unlighted beacons, post lights, light-ships, etc. The lights used are classified according to the different candle power.

LIGHTNING, the dazzling light emitted by a discharge of electricity, when passing from one cloud to another, or from a cloud to the earth. Atmospheric electricity is essentially the same as that produced artificially. It is caused by friction due to dry air coming in contact with moist air, by evaporation, and various other causes. More or less electricity is always present in the air. It is largely positive electricity during a clear sky, but takes on the negative form in cloudy weather. The discharge of lightning occurs when the two—positive and negative—come in contact with each other, but when a cloud charged with electricity comes near the earth, where it is charged with the opposite kind, the electric discharge passes into the earth's crust. In the lower regions of the atmosphere electricity is white and in the upper strata it is somewhat violet, as is the spark of an electrical machine in a vacuum.

Five general kinds of lightning may be mentioned, those known as zigzag, heat, sheet, globular, and volcanic lightning. *Zigzag lightning* appears in irregular lines, often forked at the end. This form is thought to be due to the electric current darting among the particles suspended in the air, as those of dust and moisture, to places where the air is less dense. *Heat lightning* is not accompanied by thunder. It occurs during hot weather, near the horizon, and is thought to be due to the reflection of lightning below the storm. *Sheet lightning* is generally accompanied by thunder, appearing as an expanded flash, and by it the clouds are illumined. *Globular lightning* is of rare occurrence. It appears in the form of a globe of light, remaining stationary or moving slowly through the air, but its origin is not known definitely. *Thunder* is due to the circumstance that lightning vaporizes the raindrops and enormously expands the air, thereby producing a partial vacuum. When the surrounding air rushes violently into the vacuum, the familiar loud report is produced. Since light has a velocity of about 186,000 miles per second and sound travels through a medium with an ordinary temperature at about 1,120 feet per second, it is easy to understand why a flash of lightning is seen some time before the sound of thunder is perceived. It requires about five seconds for a thunder clap to be heard a distance of one mile. The danger is slight at a mile distant from the place of lightning, though a severe shock is sometimes perceived even at a greater distance.

LIGHTNING ROD, a medium designed to protect buildings against destruction or damage by lightning. The effect of a high-class lightning rod is to conduct electric movements from the ground to the sky, thereby neutralizing the contrary electricity of passing clouds, thus diminishing their liability to flash lightning. However, if the rod is not potent enough to do this and is itself struck by lightning, it conducts the electricity to the ground. Lightning rods have a top of gilded copper or platinum at a height of from six to ten feet above the roof, thence pass in the form of a wire or iron bar to the ground, terminating from twelve to twenty feet below the surface. The lower end should extend into moist soil or be connected by an artificial conductor, else it is not effective in dispelling the danger. An area on the roof having a radius of twice the height of a lightning rod is protected. For this reason there should be a number of points on a building, all being connected with the main rod, and the latter should be protected by inclosures of glass, or some other nonconductor, to prevent a distribution of the current.

LIGNITE (lĭg'nīt), or **Brown Coal,** a compact, partially carbonized vegetable matter. It is an imperfect fuel immediately between peat and true coal. Lignite often retains its fibrous structure. It abounds in cretaceous and tertiary strata. The most extensive deposits of North America are found in the western part of the Great Plains, extending from the Gulf of Mexico to the central part of Canada. A good class of lignite consists of 33 parts of fixed carbon, 45 parts of volatile carbon, 12 parts of ash, and 10 parts of moisture.

LIGURIA (lē̇-gōō'rĭ-ä), an ancient country of Europe, now included in the northern part of Italy. It was bounded on the north by the Po, east by the Macra River, south by the Gulf of Genoa, and west by the Varus River and the Maritime Alps. Besides including the province of Genoa and the territory of Nice, it embraced a part of the region traversed by the Alps and the Apennines. The inhabitants, known as the Ligurians, were a warlike and enterprising people. In 125 B. C. they were subjugated by the Romans. Later Liguria formed the nucleus of the province of Gaul.

LI HUNG CHANG (lē hŏŏng chȧng), statesman and diplomat, born in the province of Ngan-Wei, China, Feb. 16, 1823; died Nov. 7, 1901. In 1849 he took the Hamlin degree, became secretary in the army in 1850, and was appointed provincial judge of Chekiang. He became governor of Hiangsu in 1861, and in connection with General Gordon drove the rebels out of Suchow and later from Kiangsu. For this service he received the yellow jacket and peacock feather and was created hereditary noble of the third class. He had charge of the naval, military, and financial affairs of the empire at the outbreak of the war with Japan, in 1895, and in 1896 made a tour around the world. On returning to China, he became minister of foreign affairs, received the orders of the Double Dragon in 1898, and fell into temporary disrepute for favoring progressive measures in dress and internal improvements. At his suggestion an imperial decree was issued in 1899 directing vast improvements on the Yellow River and deepening its mouth. He is noted as a man of large intellect, liberal views toward foreigners, and shrewd diplomacy. In managing the complicated state of affairs existing in China, owing to the Boxers and the foreign invasion of 1900-01, he rendered efficient service.

LI HUNG CHANG.

LILAC (lī'la̤k), a shrub of the olive family, cultivated extensively on account of its fragrant flowers and ornamental foliage. The species are numerous, most of which are native to the southern part of Europe and the western part of Asia, but they are now grown extensively in gardens, for hedges, and in parks. The flowers are variegated in color, being mostly different shades of lilac, but the white species are numerous. Among the favorite species grown for their flowers are the Persian, Charles X., and common lilacs. They have opposite leaves and flower early in spring. The common lilac, if carefully cultivated, grows to a height of twenty feet. It sends out numerous suckers.

CHARLES X. LILAC.

LILIENTHAL, Otto, inventor, born in Pomerania, Germany, in 1847; died Aug. 11, 1896. After taking a careful training as engineer, he began manufacturing steam engines at Berlin and later invented the Lilienthal flying machine. This invention was one of the most successful airships made up to 1901, when Santos-Dumont completed a flying machine and flew successfully around the Eiffel Tower in Paris, France. Though successful in several experimental tests, he was killed on a trial trip near Berlin.

LILIUOKALANI (lē-lē̇-ŏŏ-ō̇-kȧ-lä'nē̇), **Lydia Kamakeha,** Queen of Hawaii, born Dec. 2, 1838. She was a sister of King Kalakaua. On Jan. 29, 1891, she was proclaimed Queen of the Hawaiian Islands. Though temporarily successful in the government, she aroused opposition by attempting to abolish the constitution and form an absolute monarchy. Soon after, on Jan. 17, 1893, a committee of safety was formed, by which she was deposed, but in 1895 an unsuccessful effort was made to reinstate her. Subsequently she abdicated by resigning her claims to the throne and took the oath of allegiance to the republic. Her husband, John Dominis, was an American from Boston and died in 1891. She died Nov. 11, 1917.

LILLE (lēl), or **Lisle,** a city of France, in the department of Nord, on the Deule River, seven miles from the frontier of Belgium. It is connected with Paris, which is 155 miles from Lille, by railways. The place is strongly fortified. It has many beautiful streets and modern municipal facilities, including electric lights, pavements, waterworks, sewerage, and electric street railways. Among the noteworthy buildings are the Church of Saint Catharine, the Church of the Notre Dame, the Bourse, the public library, two universities, the Pasteur Institute, the lyceum, the Palais des Beaux-Arts, and many schools and hospitals. The manufactures include woolen, cotton, and silk goods, thread, sugar, spirituous liquors, porcelain, oil, and machinery. It has a large trade in merchandise and produce. Julius Caesar built a castle on the site of Lille, but its history properly dates from 1007, when it was fortified by Baldwin, Count of Flanders. Within recent years the city has added materially to its commercial importance. The Germans captured it in 1914. Population, 1922, 221,780.

LILY, an ornamental plant of the genus *Lilium,* characterized by an erect stem from a scaly bulb, numerous narrow sessile leaves, and one or more large and erect or nodding flowers. About fifty species are native to the North Temperate Zone, of which five are common to the eastern part of North America. The white lily is native to the Levant, but has been cultivated extensively in Europe for more than three centuries. It has been grown in America from its early settlement. Some of the native species of America are very beautiful, among them the golden-banded lily, wild orange-red lily, southern red lily, Turk's-cap lily, and Carolina lily. Those cultivated most extensively are the white lily, tiger lily, and golden lily. The Turk's-cap is found in marshes and attains a height of from five to eight feet, bearing orange-colored flowers with black spots. A white lily symbolizes purity and has been used in painting in connection with the Virgin Mary. It is mentioned frequently by poets and in oratory. Lilies are cultivated from the seed, by planting the bulblets, and by layers. The process of growing from the seed is slow.

LILY OF THE VALLEY, a genus of plants of the family *liliaceae,* native to the bushy places of America, Europe, and Asia. It has oblong leaves. The cup-shaped flowers are well known for their agreeable odor. Several species have medical properties of utility in cases of heart disease. The lily of the valley is a perennial and has slender rootstocks. The flowers are in a one-sided raceme. It blooms in May

LIMA (lī'mȧ), a city in Ohio, county seat of Allen County, on the Ottawa River, 71 miles southwest of Toledo. It is on the Pennsylvania, the Erie, the Nickel Plate, the Baltimore and Ohio, and other railroads, and is surrounded by a productive fruit-growing and farming country. Coal and petroleum are produced in the vicinity. It has a fine courthouse, a public library, Lima College, and many schools and churches. The manufactures embrace machinery, motor trucks, egg cases, oil products, clothing, furniture, locomotives, and utensils. Many of the streets are well paved with brick and asphalt. Other facilities include electric street railways, waterworks, sewerage, and several parks. It has a large local and jobbing trade. Population, 1920, 41,306.

GOLDEN-BANDED LILY.
Plant and Bulb.

LIMA (lē'mȧ), a city and the capital of Peru, on the Rimac River, connected with its port, Callao, and other centers by railways. The city is one of the most beautiful in South America, having a splendid cathedral, government buildings, public schools, and a university. Many modern municipal facilities have come into popular use, including electric lights, sewerage, waterworks, and rapid transit. The manufactures include cotton, silk, and woolen goods, clothing, soap, machinery, furniture, sugar, and earthenware. Its domestic and import trade is of growing importance. Pizarro founded the city in 1535. It was partially destroyed by an earthquake in 1746, and in 1881 capitulated to the Chileans. Population, 1922, 142,083.

LIME, a small tree of the orange family, native to the southeastern part of Asia, but naturalized in the tropical parts of America, the West Indies, and Europe. It attains to the height of about ten feet, bears a fruit resembling the lemon in appearance and character, but much smaller, and yields a bark of value in making mats and ropes. The wood is light and is used in the manufacture of baskets, boxes, and cradles. Large quantities of the fruit are grown to manufacture beverages and citric acid. The citric acid obtained from the lime is used largely as an antiscorbutic on long voyages at sea. It is produced in considerable quantities in Cuba and other West Indian islands.

LIME, a white earthlike calcium oxide widely diffused throughout the animal, vegetable, and mineral kingdoms. In nature it occurs in numerous forms, but is not found in a pure state. It may be produced artificially by calcining a mineral calcium carbonate, as marble, limestone, or seashells, yielding the anhydrous calcium oxide called *quicklime,* which, when moistened with water, forms *slacked lime.* Quicklime readily absorbs moisture from the air, forming *air-slacked lime.* The artificial manufacture of lime is conducted on a large scale by burning or calcining different varieties of limestone in a kiln, but the product is not sufficiently pure to be utilized for chemical purposes. Pure lime is a white substance, and is obtained from pure carbonate of lime, such as Iceland spar or Carrara marble. This is effected by heating the pure carbonate, thereby expelling the carbonic acid and obtaining the lime as a residue. There are almost innumerable uses for chemical and commercial lime. The more common uses are for fertilizing, removing hair, fat, and other foreign matters in tanning, to prepare cements and mortars for building, to causticise alkaline liquors in soap making, to disinfect and destroy noxious insects and vegetable matter, and to purify coal gas. It is used for many other purposes in manufacturing. Lime is employed largely in medicine, serving as a tonic, as an antacid, and in diarrhoea and stomach complaints.

LIME LIGHT, an artificial light produced by directing an oxyhydrogen flame against pure quicklime by means of a blowpipe. The light produced in this way is very intense. It has been utilized as a signal light, for stage service, and in various optical instruments.

LIMERICK (lĭm′ẽr-ĭk), a railroad and manufacturing city of Ireland, capital of Limerick County, on the estuary of the Shannon River, 120 miles southwest of Dublin. Among the principal buildings are the Anglican Cathedral of Saint Mary, the Roman Catholic Cathedral of Saint John, the city hall, the county courthouse and jail, and the military station. The manufactures include clothing, spirituous liquors, lace, flour, machinery, ironware, leather, and fishhooks. It is the seat of several large establishments for the manufacture of military clothing. The municipal facilities include sewerage, waterworks, electric lighting, and stone and brick pavements. It has extensive docks and wharves. The trade in cereals and live stock is important. Population, 1921, 38,403.

LIMESTONE, the general term applied to rock which are composed wholly or in part of calcium carbonate. The deposits answering to this description are very numerous, differing in composition and structure. They are widely distributed in all the geological systems, but occur most abundantly in the secondary rocks. In a pure state limestone contains about 43 parts of carbonic acid and 57 parts of lime, but the general intermixture of other minerals is very extensive. When containing magnesium carbonate, it is called magnesian; when clayey, argillaceous; when sandy, siliceous; and when the limestone is crystalline, it is termed marble. Among the principal varieties are compact, foliated, granular, oölitic, calcareous, peastone, and statuary limestone. In many localities the name of the geological system in which it is found is applied to the product, such as Devonian, Silurian, etc. Iceland spar is a grade of limestone quite transparent and rich in lime.

LIMOGES (lē-mōzh′), a railroad and manufacturing city in France, capital of the department in Haute-Vienne, on the Vienne River. The place is reached by a number of railroads and has communication by steamboats. Among the chief buildings are the Cathedral of Saint Etienne, the public library and museum, a theological seminary, and the observatory. It has sewerage, waterworks, public parks, and electric railways. The manufacture of artistic porcelain is the most important industry, but it has large manufactures of cotton and woolen goods, shoes, paper, clothing, and machinery. It is the seat of a bishop and has a large trade. Population, 1922, 98,597.

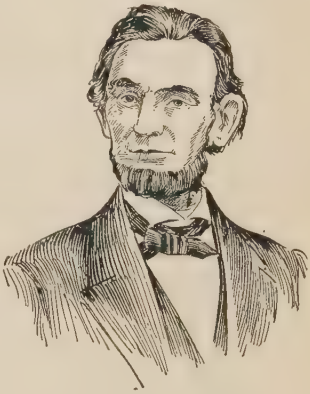
LIMONITE (lī′mŏn-īt), a common and important ore of iron, often called *brown hematite.* The deposits are not in continuous strata, but occur in the fissures and cavities of compact masses, or as a loose earth at and near the surface of beds of the carbonate of iron or iron pyrites. Limonite is of a brown or brownish-yellow color and, when pure or nearly so, has a submetallic lustre. Extensive deposits are found in the Appalachian region of North America and various parts of Europe, especially in England and Germany. An impure variety of limonite found in marshes is called *bog iron ore.* The limonite that gathers at the bottom of lakes and ponds from the drainage of regions that contain iron is called *lake ore.*

LIMPET (lĭm′pĕt), a genus of gastropod mollusks, more or less widely distributed. They are noted especially for their immense size in the tropical seas. Several well-known species occur off the Atlantic coast of America. The limpets commonly adhere firmly to rocks by means of the foot, which acts as a sucker. The shell is conical and has a more or less prominent apex, the latter turning slightly forward. The food consists of seaweed, which is rasped by the tongue. They are used for bait in fishing and for food. These animals are taken in large numbers as food by birds.

LINCOLN (lĭn̲′kŭn), a city in Illinois, county seat of Logan County, 28 miles northeast of Springfield. It is on the Illinois Central, the Chicago and Alton, and other railroads, and is surrounded by a fertile agricultural country. Bituminous coal of a fine grade is mined in the vicinity. The noteworthy buildings include the county courthouse, the public library, the high school, and many churches. It is the seat of the Odd Fellows' Orphans' Home of Illinois, the State asylum for feeble-minded children, and Lincoln College. The last named institution was founded in 1865. It has a fine library and is attended by 300 students. The manufactures include chinaware, rubber goods, caskets, clothing, and machinery. It was settled in 1835 and incorporated in 1854. Population, 1900, 8,962; in 1920, 11,882.

LINCOLN, a city and the capital of Nebraska, county seat of Lancaster County, on the Salt River, fifty miles southwest of Omaha. It is on the Union Pacific, the Chicago, Burlington and Quincy, the Chicago, Rock Island and Pacific, the Missouri Pacific, and the Chicago and Northwestern railroads. The surrounding country is fertile and devoted to agriculture, stock raising, and fruit growing. Among the manufactures are airplanes, earthenware, clothing,, cigars, canned goods, and machinery. The State capitol is a fine stone structure. It has a modern county courthouse and a United States government building. Other noteworthy buildings include the public library, the high school, University School of Music, Union College, University of Nebraska, Nebraska Wesleyan University, Cotner University, Lincoln School of Commerce, and several normal and industrial schools. It is the seat of the State penitentiary and the State insane asylum. Electric lights and street railways, waterworks, pavements, and several fine parks are among the conveniences. It has a large local and wholesaling trade. The vicinity was first settled in 1859 and three years later the place was made the capitol of the State. It was named in honor of Abraham Lincoln. Lincoln was long the home of William J. Bryan. Population, 1920, 54,034.

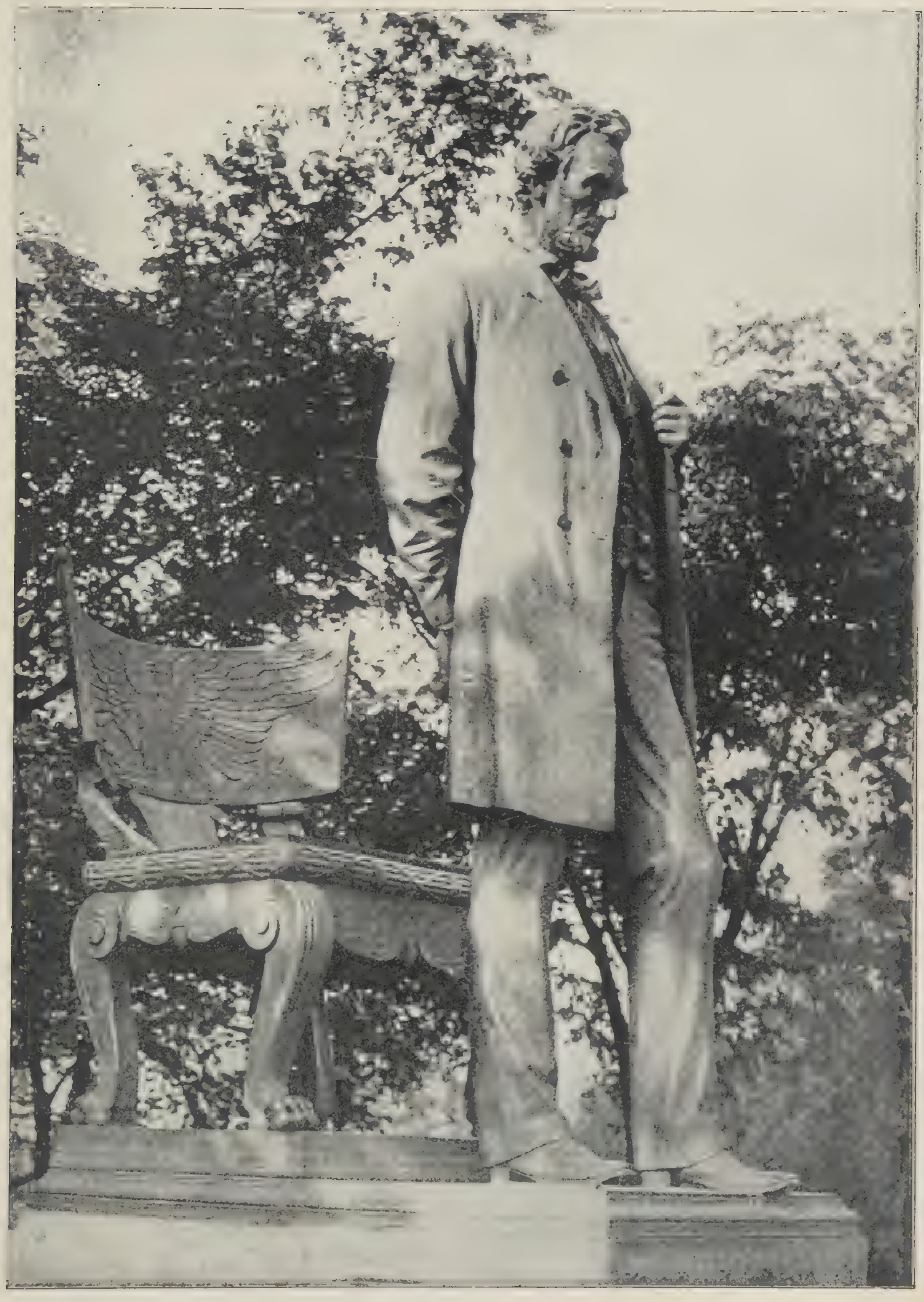
LINCOLN, a city and the capital of Lincolnshire, England, on the Witham River, 130 miles north of London. It is surrounded by a rich agricultural country and is an important railroad center. The Lincoln Cathedral, one of the finest in England, is the largest building. It is 482 feet long and 80 feet wide. The tower is 300 feet high and contains the Tom of Lincoln, a famous bell cast in 1610. Other noteworthy buildings include the public library, the townhall, the ruins of a Norman castle, and the remains of the palace of John of Gaunt. The site of the city is elevated, commanding a beautiful view of the surrounding region. The manufactures include flour, machinery, farming implements, clothing, and fabrics. It has modern facilities, such as telephones, electric lights, and rapid transit. Population, 1921, 57,294.



ABRAHAM LINCOLN.

LINCOLN, Abraham, sixteenth President of the United States, born in Hardin County, Kentucky, Feb. 12, 1809; died April 15, 1865. He descended from Samuel Lincoln, who came from England to Massachusetts in the early history of American settlements. His father, Thomas Lincoln, married Nancy Hanks in 1806, and in 1816 removed with his family to Indiana and settled in Spencer County, not far from the Ohio River, where Abraham grew to manhood. In 1818 his mother died and the following year his father married Sarah Johnson, under whose careful training his youthful character was formed in the line of prudence and industry. His early education was necessarily limited, but, being studious, he developed remarkable proficiency in the elementary branches and became a studious and scrutinizing reader. His father again emigrated in 1830, settling in Macon County, Illinois, where Abraham, having attained the unusual stature of six feet four inches, joined with his father in clearing the field, building his cabin, and splitting the rails for inclosing the land used for farming purposes. After clearing and fencing the farm, Abraham engaged with a man named Denton Offutt, whom he accompanied to New Orleans on a trading voyage, and later engaged with him as a clerk in a general merchandise store at New Salem. While there, Lincoln read extensively, began the study of surveying and the principles of law, but soon after raised a company to oppose an Indian uprising, being elected captain of a company of volunteers.

The company was mustered out of service after a short time. However, Lincoln reënlisted as a private and was mustered out in 1832, returning home to make a canvass for the Legislature, but was defeated. He next purchased a



(Opp. 1594)

SAINT GAUDEN'S STATUE OF LINCOLN, IN LINCOLN PARK, CHICAGO, ILL.

store, giving his note for the purchase money, but was unfortunate in selecting a partner, on account of which the business venture proved a failure, and he was called upon to pay the indebtedness out of his personal earnings. Soon after leaving the store, he devoted his whole time to the study of law, was appointed deputy county surveyor, and in 1833 became postmaster of New Salem, a position he filled successfully for three years. He served in the Legislature from 1834 to 1842, declining further election. In 1837 he formed a law partnership with John C. Stuart at Springfield, and built up a successful practice. He married Mary Todd in 1842, and in 1846 defeated Peter Cartwright, a famous Methodist preacher, for Congress, but was not a candidate for reëlection. While in Congress he took an active position against the extension of slavery, favored the abolition of slavery in the District of Columbia, but, after retiring, gave little heed to politics, though still favoring the Whig party. When the Kansas-Nebraska bill was passed, in 1854, he again undertook active campaign work, and became a leading exponent of the newly formed Republican party in the State of Illinois.

In 1855 the Whig minority of the State Legislature of Illinois supported Lincoln for United States Senator, but his Democratic opponent, Lyman Trumbull, was elected. His party chose him to oppose Stephen A. Douglas for the Senate in 1858, and he immediately challenged his opponent to a joint debate. The debate that followed attracted national attention, but the Legislature chosen selected Douglas as Senator. He had been mentioned for the Vice Presidency in 1856, receiving 110 votes in the national convention, and in 1860 he was nominated for the Presidency on the third ballot in the Chicago convention over William H. Seward, who was his principal competitor. In the election that followed the Democratic party was divided and the vote in the electoral college was as follows: Lincoln, 180; Breckenridge, 72; Bell, 39; and Douglas, 12.

Soon after the election of Lincoln to the Presidency, a secession movement began in the Southern States. This course on the part of the Southern people was occasioned largely by a widespread alarm at the aggressive antislavery policy proclaimed by many leading Republicans. At the time Lincoln was inaugurated, March 4, 1861, seven states had announced their secession and began to organize resistance to the policy of the administration. Lincoln adopted a conciliatory course, holding steadfast to the union of states and denying their right of secession claimed by the seceding states. The Confederate government was organized as early as April 4, and on April 13 the Confederates struck the first blow of the Civil War by capturing Fort Sumter. It was a period of intense excitement. The long war that ensued was the most terrible conflict of recent times, the Northern States holding steadfast to the union of states, and putting forth every energy to maintain the Union. In the history of the struggle Lincoln is identified with every important phase, giving studious attention to foreign complications, domestic politics, and military and naval movements, as well as routine domestic duties. Profiting by the partial success of Antietam, he issued a preliminary proclamation on Sept. 22, 1862, fixing the coming Jan. 1 as the date of freeing the slaves in the Southern States, in the event that the seceded states would not yield, and, accordingly, the Emancipation Proclamation was issued. His famous eulogy was issued on the battlefield of Gettysburg in 1863.

The Republican national convention at Baltimore unanimously renominated Lincoln for the Presidency on June 8, 1864, and at the election that followed in November he received 212 electoral votes to 21 cast for General McClellan, the seceded states not taking part in the election. He visited Richmond after its fall, and entered upon a studious investigation of the questions relating to reconstruction. While at a theater in Washington he was shot by John Wilkes Booth on April 14, 1865, from the effects of which he died the following day. The remains were taken for burial at Oak Ridge, near Springfield, Ill., amid the most profound sorrow of the nation. The unexpected death of President Lincoln is rightfully regarded the saddest event of American history. Many of his sayings have become proverbial. His sincere devotion to country and his uprightness in every act have rarely been equaled.

LINCOLN, Benjamin, revolutionary general, born in Hingham, Mass., Feb. 3, 1733; died there May 9, 1810. His first official position was that of magistrate, later he held membership in the Provincial Legislature, and at the beginning of the Revolution became an organizer of troops in Massachusetts, securing the rank of major general in 1776. In the same year he drove the British vessels from Boston harbor, and soon after reinforced Washington on Long Island, taking part in the Battle of White Plains. During the following summer he served with Schuyler against Burgoyne, was severely wounded at the Battle of Bemis Heights, and in the following year secured command of the army in the south. Sir Henry Clinton besieged him at Charleston in 1780 with a superior force, and, after being compelled to surrender, he was permitted on parole to return to Massachusetts. In 1781 he was with Washington at the siege of Yorktown, and, when the British forces surrendered, he received the sword of Lord Cornwallis. Under the Articles of Confederation, in 1781-84, he served as Secretary of War. In 1787 he quelled Shay's rebellion in Massachusetts, became Lieutenant Governor of that State, and served as collector of the Boston port in 1789-1808, receiving the appointment under Washington.

LINCOLN, Robert Todd, public man, eldest son of Abraham Lincoln, born in Springfield, Ill., Aug. 1, 1843; died July 26, 1926. He studied and graduated at Harvard University in 1864, and served on the staff of General Grant the latter part of the Civil War. Shortly after the war closed he entered upon a successful law practice in Chicago, where he gave his attention to that profession until 1881, when he became Secretary of War under President Garfield. He served until the end of President Arthur's administration, and afterward resumed the law practice in Chicago. President Harrison appointed him minister to England in 1889, a position he held until 1893. In 1897 he became president of the Pullman Palace Car Company.

LINCOLN CATHEDRAL, one of the finest cathedrals in England, located in the city of Lincoln, on the summit of a hill overlooking that city. It is in the early English style of architecture and contains the bell called Tom of Lincoln, which was cast in 1610. The building is 482 feet long, 80 feet wide, and the central tower is 300 feet high. Two other towers have a height of 180 feet. The cathedral is one of the finest specimens of architecture belonging to the Anglican church.

LINCOLN'S GETTYSBURG ADDRESS, a memorable address made by Abraham Lincoln at the dedication of the Gettysburg cemetery, Nov. 19, 1863. It is rightfully regarded a literary gem. The following is the address in its entirety: "Fourscore and seven years ago our fathers brought forth on this continent a new nation, conceived in liberty and dedicated to the proposition that all men are created equal. Now we are engaged in a great civil war, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We have met on a great battlefield of that war. We are met to dedicate a portion of that field as the final resting place of the men who here gave their lives that the nation might live. It is altogether fitting and proper that we should do this. But in a larger sense we cannot dedicate, we cannot consecrate, we cannot hallow this ground. The brave men, living and dead, who struggled here have consecrated it far above our power to add or detract. The world will but little note, nor long remember what we say here, but it can never forget what they did here. It is for us, the living, rather to be dedicated to the unfinished work which they who fought here have thus far so nobly carried on. It is rather for us to be here dedicated to the great task remaining before us; that from these honored dead we take increased devotion to the cause to which they gave the last full measure of devotion; that we here highly resolve that these dead shall not have died in vain; that the nation shall, under God, have a new birth of freedom; and that government of the people, by the people, and for the people shall not perish from the earth."

LIND, Jenny Maria, eminent singer, "The Swedish Nightingale," born in Stockholm, Sweden, Oct. 6, 1820; died near Malvern, England, Nov. 2, 1887. When but three years old she could sing beautifully, was admitted to the court theater singing school at nine years, and about that time began to sing on the stage. She appeared in Weber's "Der Freischutz" at eighteen, and soon became the most popular singer of the Stockholm Royal Theater. In 1841 she took lessons in Paris, but three years later entered for extended study at Berlin, where she learned German and appeared successfully in Meyerbeer's operas. She visited Vienna in 1846 and London in 1847, appearing at the Royal Theater in the latter city.

JENNY MARIA LIND.

While at London she attracted the attention of P. T. Barnum and, when she came to America in 1850, she made a tour under his auspices throughout the United States and Canada, receiving $100,000 as her share of the profits. On Feb. 5, 1852, she married Otto Goldschmidt, a composer and pianist, who played with much success in Europe and America. He was born in Hamburg, Germany, Aug. 21, 1829, and died Feb. 25, 1907. Subsequently she made successful visits to the leading cities of Europe, appearing for the last time at Düsseldorf in 1870. They made their home the greater portion of the time in Dresden, but in 1858 they settled in England. Much of the fortune secured by the excellent voice of Jenny Lind was devoted to charitable and philanthropic enterprises. She founded schools in her native land, and gave to charities in Germany and many other European countries. Several gifts were made to educational enterprises in the United States. She had a pure and elevated mind and deep religious feelings, and was one of the most celebrated singers of modern history.

LINDAU (lĭn′dou), **Paul,** author, born at Magdeburg, Germany, June 3, 1839. He studied philosophy and literature at Halle and Leipzig, and subsequently took advanced courses in Berlin and Paris. In 1863 he edited a newspaper at Düsseldorf and in 1872 founded *The Present,* a weekly journal devoted to politics and literature. He came to the United States in 1883 and attended the ceremony which formally opened for traffic the Northern Pacific Railroad, and at the same time traveled extensively as a correspondent in the western and southern sections of the United States. He is the author of about sixty volumes of dramas, sketches, and stories.

LINDBERG, Charles A., noted aviator, born in Detroit, Mich., Feb. 4, 1902. His father, Charles A. Lindberg, removed to Minnesota and represented the sixth district of that State in Congress from 1907 to 1917. His mother was a teacher in the Cass Technical High School of Detroit and became known for her fondness of flying. Early in life he took a liking to mechanics, experimented with machinery, and finally entered the mail service. He had a mail route between Chicago and St. Louis and while at St. Louis he enlisted in the National Guard, attaining the rank of captain.

In 1927 he undertook to win the purse of $25,000 offered by Raymond Orteig to the aviator who would make the first non-stop flight from New York to Paris. Accordingly, he purchased a Ryan monoplane, which he renamed the *Spirit of St. Louis,* in memory of King Louis of France. On May 20, 1927, he started for Paris, and landed there the following day, making the trip of 3,800 miles in 33 hours and 29 minutes. This achievement brought him unusual honors throughout America and Europe, and he was raised to the rank of colonel. Subsequently he won equally great honors by visiting every State in the United States and making friendly flights to Canada, Mexico, Central America and the West Indies. On returning to St. Louis, he devoted his attention to the development of aviation and the execution of important flights.

LINDEN, a forest tree of Europe. The species native to America are commonly called *basswood* and *lime.* Many species are included in this class of trees, the European and American being quite similar. The linden is a favorite tree for gardens and house yards, having widespreading branches when isolated.

LINDSAY (lĭn′zȧ), a city of Ontario, county seat of Victoria County, on the Scugog River, 68 miles northeast of Toronto. It is on the Canadian National and Canadian Pacific railroads, in a fine farming country. The principal buildings include the county courthouse, the high school, the public library, and several churches. It has manufactures of flour, chemicals, worsteds, ironware, and lumber products. The municipality maintains systems of sewerage and waterworks. Population, 1901, 7,003; in 1921, 7,620.

LINDSAY (lĭn′sĭ), **William,** public man, born in Rockbridge County, Virginia, Sept. 4, 1835; died Oct. 9, 1909. In 1893 he succeeded J. G. Carlisle as a member of the United States Senate, and the following year was reëlected for a full term of six years. He disagreed with his party in 1896 on the money question and retired to practice law in New York City. President McKinley made him a commissioner for the Louisiana Purchase Exposition.

LINEN, a fabric woven from the fibers of flax. Linen textile fabrics include many varieties, such as lawn, damask, cambric, sheeting, toweling, and ducks. The manufacture of this commodity dates from remote antiquity, a fact evidenced by Egyptian monuments and the embalmed dead found in the tombs, many of which are wrapped in linen products. Writers generally express the view that the Jews introduced its manufacture into Western Asia, and that it spread thence to Europe by way of Greece. It is probable that the Romans taught the art of making linen to the people of Western Europe, since the manufacturing establishments in those parts of the continent have been important for many centuries. The linens made in Belgium, Holland, France, Germany, and England are especially noteworthy, for the reason that the products are of a very high quality in fineness and the output is very large. Linen has been manufactured in the United States for many years, but the first extensive mill was built at Fall River, Mass., in 1834, since which time the industry has been gradually developing, though the finer products are still imported in large quantities.

When flax is received at the mill it has to undergo a line of preparatory operations before being spun into yarn for weaving. It is first heckled, by which the coarse parts are separated from the fine, and then is prepared for spinning, the latter being done by machinery. After being spun into yarn, the threads are woven into the different kinds of products by machinery, the apparatus depending upon the class of goods desired. However, the machinery does not differ materially from the devices used in the manufacture of cotton. The extensive production of cotton has affected the output of linen fabrics, especially in Europe, but linens have many advantages for various purposes. Linen is much smoother than cotton, has a brighter luster, does not absorb moisture as easily, and is a healthful, clean, and cool material for sheeting and summer clothing. When bleached, starched, and dressed, it furnishes the beautiful material used for collars, shirt fronts, cuffs, and many other useful articles of apparel. It is stronger and heavier in weight than either cotton or yarn and, since machinery can be applied to every phase of its manufacture, it has assumed an important place among the textile fabrics. The common grades of linen are those used for bedding and plain clothing, while the heavy ducks enter into the manufacture of tents, sails, and coarse clothing.

LING, a species of sea fish found in the northern seas as far north as Iceland. It is allied to the cod family. The body measures from three to four feet in length, has a grayish back and sides, and the head is flat. The ling is very valuable as an article of commerce. It is caught most abundantly from February to May, when it is in the best condition, and begins to spawn in June. Split from head to tail and cured in salt brine and dried, it becomes known as *stockfish.* An oil is extracted from the liver, which is used as a substitute for cod-liver oil and for lighting purposes in lamps. Among the species are the common ling, the eel-shaped *blenny* found off Massachusetts, and the *gadoid* of Europe.

LING, Pehr Henrik, poet and gymnast, born at Ljunga, Sweden, Nov. 15, 1776; died May 3, 1839. He traveled through Germany and France, where he visited the leading gymnasiums, and in 1805 became fencing master at the University of Lund. Later he held similar positions at Karlberg and Stockholm and in 1835 was made a member of the Swedish Academy. He is the originator of the *Swedish movement cure,* which consists of a system of gymnastic exercises and movements used in the treatment of many chronic diseases. His books include several works on poetry and his "Elementary Principles of Gymnastics."

LINGARD (lĭṉ′gärd), **John,** historian, born in Winchester, England, Feb. 5, 1771; died July 13, 1851. He descended from a prominent Catholic family, studied at the Douai College in France, and in 1794 was ordained priest. Soon after he became professor of philosophy at Crookhall, and was made president of that Catholic institution in 1810. His writings include "Antiquity of the Anglo-Saxon Church" and "History of England." The latter has passed through many editions, was written from a Catholic standpoint, and holds high rank among English histories. His "New Version of the Four Gospels" is still a popular work.

LINNAEA (lĭn-nē′ȧ), a plant of the honeysuckle family. It is a small trailing evergreen herb, has round leaves, and bears fragrant flowers of a pinkish color. Only one species is contained in the genus. It is found in the northern regions of the Northern Hemisphere and occurs in mountainous places as far south as Maryland and California.

LINNAEUS (lĭn-nē′ŭs), or **Linné, Carl von,** eminent botanist, born near Stenbrohult, in the province of Småland, Sweden, May 24, 1707; died Jan. 10, 1778. He was the son of Nils Linné, a Lutheran minister, but assumed the Latin name of Linnaeus. He developed an early interest in botany and physiology and in 1727 began the study of medicine at Lund, but the following year entered for study at Upsala. His university work was interfered with because of his poverty, but by the assistance of Olaf Rudbeck he was enabled to carry forward his study. In the meantime he was curator of the botanical garden. In 1732 he secured government aid to make a research of the flora of Sweden and Lapland and soon after published his "Lapland Flora." Subsequently he studied mineralogy at Fahlun, and in 1835 received a degree from the Harderwyk University in Holland. While in Holland he became associated with eminent scientists, and from time to time announced original discoveries in the study of plants, especially as relating to plant classification. After visiting Germany, France, and England, he became president of the Stockholm Academy, and in 1741 was made professor of medicine in Upsala, but the following year accepted the professorship of botany.

CARL VON LINNAEUS.

Linnaeus is the most eminent naturalist of his time, possessing remarkable accuracy of observation and a philosophic mind. He gave the world an arrangement of plants on a system of sexual relationship, thereby preparing the way for the more modern system of classification now generally approved. His writings include "The Natural System," "Fundamental Botany," "Genera of Plants," "Philosophy of Botany," and "Species of Plants." He wrote an oration in Latin, entitled "On the Necessity of Traveling in One's Own Country," which was published shortly after he made a survey of the islands of Gotland and Öland, in the Baltic.

LINNET (lĭn′nĕt), a singing bird of the finch family, native to North America and the northern portions of Europe and Asia. It is migratory, moving southward in autumn. The body is six inches long and the extended wings measure ten inches. Most linnets are yellowish in color with markings of brownish, but there are red, gray, and brown species. They change color somewhat according to the seasons of the year. Several species inhabit different parts of the Old World, those found in Egypt coming largely from the Levant to winter. The song is cheerful and lively and is distinguished by its pleasing notes, making the linnet a favorite cage bird.

LINOLEUM (lĭ-nō′lē-ŭm), an important product derived from linseed oil by the application of chloride of sulphur. It is useful for many purposes, its utility depending upon the nature of the process to which the ingredients are subjected in preparation. In a common form it consists of thin sheets, which serve purposes quite similar to India rubber or guttapercha. It is dissolved and used in preparing carpets, table covers, waterproof coats, etc. In a vulcanized form it serves for handles in cutlery and for moldings, and in other forms as a cement and for painting both iron and wood works.

LINOTYPE (lĭn′ō-tīp), a machine for producing stereotyped lines or bars of words as a substitute for typesetting. This machine uses matrices instead of type, each of these responding to the touch of keys, thereby falling into the proper place. When sufficient matrices to form a line have been set, they are moved automatically to the casting apparatus, where they are lined up, or justified, and molten metal is cast to form a solid line of type, after which the matrices are returned by the machine to their proper places by automatic action. The lines or bars containing the words are set up side by side to constitute a column. This machine was invented by Ottmar Mergenthaler (q. v.) and is one of the most practical inventions of the kind. Several styles of type, such as brevier, nonpareil, and *italics,* can be set at the same time by using different cases of matrices. See **Type.**

LINSEED OIL, an oil expressed from the seed of flax, which forms the type of the class known as *dry oils,* from their property of drying into a transparent, tough mass when exposed to the air. It is secured from the linseed either by heating to 200° Fahr. or by pressure without heating, the latter process being regarded the better, as the oil extracted by that method is less liable to chemical decomposition. If the raw oil is boiled until it loses about one-sixth of its weight, it becomes of greater value, since it dries up more readily than in the fresh state and forms, when applied in painting, a turpentinelike mass which is scarcely soluble in oils. In that form it constitutes the basis of painters' and printers' varnishes. About 28 per cent. of the quantity of seeds pressed is the amount of oil secured, and the residuum constitutes a valuable product for domestic animal food, known as *linseed cake.* It is sold on the market either in solid cakes or as meal. The principal uses of linseed oil are for mixing paints, preparing varnishes, oil cloth, printers' ink, soft soap, and linoleum, an article used largely for covering floors. Linoleum is prepared by solidifying linseed oil through the agency of chloride of sulphur.

LINTEL (lĭn'tĕl), a piece of timber or stone laid horizontally over a doorway or window for the purpose of furnishing support to the building. It is sometimes constructed in the form of an arch and sometimes as a short architrave.

LINZ (lĭnts), a city of Austria-Hungary, capital of the crown land of Upper Austria, 102 miles west of Vienna. It is located on the Danube River and is strongly fortified. The chief buildings include the cathedral, an armory, a public library, and a number of schools and churches. It has extensive railroad and electric railway facilities and is the seat of a large trade in tobacco, leather, cereals, and live stock. In the time of the Romans it was known as *Lentia.* Population, 1920, 67,859.

LION, a majestic carnivorous animal, the largest of the cat family. It is one of the most active of the large quadrupeds, has a yellow or tawny color, and measures from eight to ten feet in length. At the shoulder the height is about four feet. The tail is nearly four feet long, tufted at the end, and the male has a large, shaggy mane. In all species the lioness is smaller than the lion, but more impetuous and agile, and is destitute of a mane. The mane begins to grow at the age of three years, maturity is reached at about six years, and the average life is thought to be about twenty years. Lionesses bring forth from two to four young annually, and the whelps are nourished nearly a year. While the favorite abode is an open plain, during the breeding season they remain secluded, and both parents give much evidence of energy in defending their young.

Like the cat, the lion is disposed to hunt its prey most commonly during the night, stealing upon it with great caution, and when at the proper distance it leaps with well-directed force and accuracy. The eyes are brilliant and the body is muscular. The great strength of the lion has caused it to be called the *king of beasts,* though its noble appearance and kingly bearing no doubt contribute largely to this appellation. Travelers find it a protection to kindle a fire and keep it steadily burning, as the lion shuns flames, and rather avoids than attacks man unless induced to forceful means by hunger. Formerly lions were common to Europe, but the advent of civilization has caused their retreat to the wild regions of Asia and Africa. The African lions are by far the largest, and include a number of species. Those found in Asia are medium in size and in some species the males do not have a mane. The *puma* of America is often classed as a lion. If captured young, lions may be domesticated and trained to acts of skill, for which purpose they are frequently exhibited at exhibitions. At the time of the prosperity of Rome many exhibitions consisted of fights between lions and other animals, or even between lions and men. They were employed to some extent for the destruction of Christians and criminals.

LIONESS AND WHELPS.

LIPARI (lĭp'ȧ-rē), or **Aeolian,** a group of seventeen islands, lying north of Sicily, but only six are of material size. The area is 58 square miles. It belongs to Italy and contains numerous ancient ruins and volcanic mountains.

Earthquakes and storms are frequent. The industries include fishing, mining, and fruit raising. Pumice stone, soda, sulphur, niter, fish, wine, and tropical fruits are the principal products. Among the chief islands are Lipari, Vulcano, Filicuri, Salina, Panaria, and Stromboli, the celebrated intermittent volcano Stromboli being on the last named island. Lipari is the only island of the group that was inhabited anciently. Population, 1922, 20,806.

LIPPI (lē'pē), or **Fra Filippo,** noted painter, born in Florence, Italy, about 1406, died at Spoleto, Oct. 8, 1469. He studied at Florence and became famed as a skillful painter of historical and Bible views. His productions include several Madonnas, illustrations of the lives of Saint Stephen and John the Baptist, and various frescoes in Florence. His son, Filippino Lippi, was born at Florence in 1457; died there on April 13, 1504. The latter also attained to fame as a painter of religious and historic characters. The most celebrated of his works include "The Crucifixion of Saint Peter," "Paul Preaching at Athens," and "Paul Visiting Saint Peter in Prison." Many of his frescoes may still be seen in Rome and Florence.

LIPTON, Sir Thomas Johnstone, merchant and yachtman, born at Glasgow, Scotland, in 1850. He descended of Irish parentage, secured a business education, and worked at various employments in New York and South Carolina. In 1876 he opened a provision store at Glasgow, founded more than 450 stores in Great Britain, and became the owner of large tea estates in Ceylon. In 1901 he was knighted and the following year became a baronet. Sir Lipton is known in America for his interest in yachting, being the owner of the Yachts *Erin* and *Shamrock III*. He visited Canada and the United States a number of times, taking part in several noted yachting contests.

SIR THOMAS J. LIPTON.

LIQUEUR (lē-kẽr'), an alcoholic cordial sweetened and flavored with aromatic substances for the purpose of making it pleasing to the taste. Various products are used for the purpose, such as cumin and caraway seed in the preparation of kummel; cloves in preparing clove cordial; bitter almonds in making noyau; and aniseed in preparing aniseed cordial.

LIQUID (lĭk'wĭd), a substance whose parts retain no definite form, but change their relative position on the slightest pressure. The term liquids is applied to all fluids, but many fluids are not liquids, such as air and the gases. Water is the most common liquid. See **Hydrostatics.**

LIQUID AIR, the name applied to the product obtained by liquefying the so-called permanent gases, such as hydrogen, nitrogen, and oxygen. Though various gases were liquefied fully a century ago, much attention has been directed to the process, particularly because of the invention of a new and more powerful apparatus. Faraday attained considerable success in liquefying nitrous oxide and ammonia, but renewed interest was directed to the process in 1898 by Chas. E. Tripler, of New York City, and subsequently by others. To liquefy gases two factors are necessary—pressure and cold. By the application of both these factors to a sufficient extent, any gas, so far as known, may be liquefied. The point at which liquefaction takes place is called the *critical temperature,* a term applied to both the temperature and the pressure at which a gas liquefies. These differ according to the nature of the gases. For instance, argon liquefies at the critical temperature of —250° Fahr. and the critical pressure of 759 pounds; nitrogen, at —295° and 525 pounds; and oxygen, at —245° and 762 pounds. In an experiment it was found that liquid air freezes at a temperature of 2,400° below zero.

Besides Tripler, W. Hampson, of England, and Carl Linde, of Germany, have brought forth practical machines for producing liquid air. While different in many details, they are quite alike in general principles. Among the essential parts is an air compressor, by which air is compressed in a series of cylinders connected by automatic gauges, and the heat resulting from the compression is removed by intercoolers. The construction is such that the last of the series of coolers is in a large tank filled with running water, which serves to cool the air pipe, and the air is thence conducted through a separator to free it from moisture. It next passes to the liquefier, a device constructed of small pipe with many turns, which is surrounded by a heavy felt packing to protect it from external heat. When the pressure at the lower end of the coil becomes raised to a sufficient intensity, an expansion valve permits the cool air to pass between and around the coiled pipes.

As this operation is continued, it has the effect of gradually cooling the air until the critical point of temperature is reached, when portions of the air liquefy and the product falls into a receptacle, from which it may be taken and used for purposes intended. Formerly it was thought that liquid air would come into wide use, as for refrigeration, ventilating and cooling rooms, and divers hygienic purposes, such as the destruction of typhus bacilli and bacteria. Since it has a general temperature of 312° below zero, its usefulness for these purposes would seem practical, but the expense of producing and the difficulty of handling it have precluded its use, except in physical laboratories. Ice at 30° Fahr. is as a furnace in comparison with liquid air, and, when placed on a block of it, liquid air boils in a manner quite similar to water affected by a hot fire.

LIQUIDAMBAR (lĭk′wĭd-ăm-bẽr), a genus of trees found in Asia and North America. The common liquidambar is a tall tree, has lobed leaves, and is native to Mexico and the southern part of the United States. It grows to a height of 100 feet and is valuable for the timber, which is sometimes called *satin walnut* in the markets. Four species of these trees have been described, all of them more or less valuable in their production of fragrant resinous matter, called sweet gum, copal balsam, or liquidambar.

LIQUORICE. See **Licorice.**

LISBON (lĭz′bŭn), the principal seaport and capital of Portugal, on the Tagus River, about nine miles from the Atlantic Ocean. It has a very beautiful site, an important harbor, good railroad connections, and a number of modern municipal improvements. Among the public utilities are gas and electric lighting, stone and macadam pavements, sewerage, and an extensive system of electric street railways. The harbor is commodious and strongly fortified. It has a large export and import trade, especially with the colonies. The manufactures include cotton, woolen, and linen goods, jewelry, tobacco, hats, clothing, boots and shoes, machinery, earthenware and utensils. Some of the older streets are tortuous and have few sanitary facilities, but the newer parts are clean and well regulated.

Much of the architecture is of stone and brick. The principal buildings include the national library, the customhouse, the arsenal, the Church of Saint Rogue, the Monastery of the Heart of Jesus, and the national theater. The national library has 200,000 volumes. Many of the public places are adorned with fountains and statuary. The water supply of the city is secured through an aqueduct eighteen miles in length, which is regarded the most extensive bridge architecture in the world. Lisbon was founded by the Phoenicians and passed to the Romans, then to the Goths, and later to the Moors. In 1146 it was captured by Alfonso I. It became the capital of Portugal in 1422. In 1755 one of the greatest earthquakes on record visited the city, in which 35,000 persons were killed. Population, 1922, 339,044.

LISTER (lĭs′tẽr), **Sir Joseph,** surgeon, born at Upton, England, April 5, 1827; died Feb. 11, 1912. He studied at the London University and in 1860 became professor of surgery at Glasgow. In 1869 he was made professor of clinical surgery in the University of Edinburgh and later held a like position at King's College Hospital, London. He made valuable discoveries in antiseptic treatments in surgery, by means of which modern surgery has been revolutionized to a large extent. His works include "Illustrating the Antiseptic Treatment," "Remarks on a Case of Compound Dislocation of the Ankle with other Injuries," and "A Contribution to the Germ Theory of Putrefaction."

LIZT (lĭst), **Franz,** pianist and composer, born in Raiding, Hungary, Oct. 22, 1811; died in Baireuth, Oct. 31, 1886. He undertook the study of music at the early age of six years, at nine attracted much attention by his skill on the pianoforte, and soon after secured means from several noblemen to study at Vienna a period of six years. In 1823 he began additional study at Paris. Two years later he composed his first work, entitled "Don Sanche." Beginning in 1839, he traveled through various countries of Europe, everywhere exciting applause and admiration. In 1848 he became director of the court theater at Weimar, Germany. While there he met with enthusiastic reception and introduced the music of such writers as Berlioz, Wagner, and Schumann. Richard Wagner married his daughter, and Hans Guido von Bülow was among his pupils on the pianoforte. In 1865 he was ordained a Catholic priest and after 1871 resided principally in Pesth. Among the distinguished honors bestowed upon him was the decoration of the cross of the Legion of Honor, and in 1861 he was made commander in that organization. Liszt was not only an excellent musician, but an author, and was noted for his generosity and extensive influence over the younger musicians of his time. His principal works include two concertos, fifteen symphonies, and a number of oratorios. He published "Life of Chopin" and "Gypsies and their Music." Among his chief musical works are the mass "Christus," "Faust's Symphonie," "Saint Elizabeth," and "Coronation Mass."

LITANY (lĭt′ȧ-ny̆), a solemn prayer or supplication addressed to God with the view of obtaining mercy and assistance. It is used chiefly on occasions of public calamity, especially in the case of prolonged drought and the prevalence of epidemics. The Kyrie Eleison (q. v.) is the earliest and most simple form of litany and is repeated a number of times. Two other forms of litany are those known as the *Litany of Loreto* and the *Litany of the Name of Jesus.* The requirement to repeat the litany in the Roman Catholic church applies only on Rogation Days, or the Monday, Tuesday, and Wednesday before Ascension, and on Saint Mark's Day, but it is used by common consent at the time of great calamities and special occasions, such as consecrations and ordinations.

LITCHFIELD (lĭch′fēld), a city of Montgomery County, Illinois, 43 miles south of Springfield, on the Wabash, the Illinois Central, the Chicago, Burlington and Quincy, and other railroads. The chief buildings include the public library, the high school, and a number of churches. It has waterworks, sewerage, and well-graded streets. Among the manufactures are threshing machines, earthenware, radiators, flour, and brooms. The surrounding country is agricultural and dairying. It has valuable deposits of coal, natural gas, and mineral oil. Litchfield was settled in 1853 and incorporated in 1859. Population, 1900, 5,918; in 1920, 6,215.

LITER (lē'tēr). See **Metric System.**

LITERATURE (lĭt-ēr-ȧ-tûr), the written or printed productions of the human mind distinguished by vigor and elevation of thought. Our educational institutions and the general public are giving attention to home reading and the attainment of literary culture with an ever-growing interest. Never before has there been greater activity than at present among the American people to own and read good books. This desire is not confined to any particular class, and it exists with almost as much intensity in the country as it does in the cities and towns. Through the general diffusion of knowledge among the masses in the schools, the reading habit has become almost universal, and the school days, apparently stopping when the child leaves school, extend far into the adult life of the individual. The character of the reading is as diversified as the tastes of the human mind, and it covers topics in all departments of knowledge. In fact, there is no field left unexplored. Even in the same neighborhood may be found men and women pursuing subjects as widely separated as if they were inhabitants of two cities on opposite sides of the globe.

In the stricter and narrower sense literature belongs to the fine arts and embodies thought that is power-giving, or inspiring and elevating, rather than merely knowledge-giving. In this sense it excludes the writings that are merely technical or for a particular class, and embraces those that are of interest to man in an aesthetic sense, that are characterized by an elevated tone and style, and shaped by the creative imagination or power of artistic construction. Literature may be divided into three classes, representative discourse, oratory, and poetry. *Representative discourse* embraces all the productions in which the writings are for the sake of the theme itself; *oratory,* where the representation is for the sake of the effect on another mind; and *poetry,* where it embodies in beautiful form the thoughts presented, largely for the sake of the form. Dean Stanley embraces in literature all those great works that tower above professional or commonplace uses, and take possession of the mind of a whole nation or a whole age.

"Literature in the higher sense" is a criticism of life, but it is usually defined as all that has been written that was worth reading years or centuries afterward. Not everything that has been written can be classed as literature. What there is that has "the potency of life in it" is for this reason worthy of consideration. Out of such material, either preserved in books or hidden away in diaries, true literature has been made. This is, in a large measure, the unwritten history of the people themselves, which in later years is gathered up and shaped into form. While the literature of this country is a vigorous offshoot from the parent stock, and is modeled largely after it, yet it possesses distinct national characteristics indicating the modes of thought and the persistent activity of the American people.

Coming from England, our ancestors brought some books with them, and the need of books written in the colonies was not felt at first, yet diaries were kept by some of the early settlers and from these jottings one is enabled to conceive with a very considerable degree of accuracy how the first settlers lived, worked, associated together, and what manners and customs they observed, and the general appearance of the country, the habits, modes of life, and the peculiarities and general traits of the savages with whom they came in contact. As the settlements prospered and their interests expanded in the different colonies and a wider acquaintance with the affairs of men in all parts of the world became necessary, attention was directed to other nations, their laws and institutions. However, the first settlers in the colonies had much hard work to do, but there were some men among them who had been liberally educated and their influence reached down among the masses in every settlement. There was then present, as there is now, an instinctive feeling among the masses to respect the man who knows more in general than his fellows, and whose judgment is sound and whose opinions are based on a comprehensive view of a situation.

In the early history of the country, little time could be devoted to writing books that would now be worth reading, except to show how the people themselves lived. The younger living had to preserve the history of the older living for the benefit of the future historian, novelist, essayist, or antiquarian. Written thoughts live; oral tradition dies. Our ancestors were men and women of high and lofty purposes. They had cut themselves loose from all the old-world ties in order to carve out a mighty destiny under other skies, on an unexplored continent. Their higher thoughts were occupied with notions of divine and civil government. What was written then had a gloomy religious coloring, inherited from conditions that had in a large measure influenced them to leave the old world and to settle in the new. From 1607 to 1765, there were feeble attempts, as now judged, in writing some books chiefly on interpreting the Scriptures and the extent of the authority of kings and potentates. Our literature had its beginning during this period.

The literature of Canada and the United States is all of modern origin. None of it is three hundred years old. The study of American literature is the study of the best literary productions of the men and women who wrote them, and some account of the life of each. Books that have a permanent interest for all men, extending throughout all time, may be classed as literature in contrast with those writings that had only a temporary interest. Education along literary lines in recent years has invariably taken two directions—one is a return to the study of those productions which have stood the test of time, and incorporate the expressions of the race as well as the experience of the individual who reads such books for the first or the twentieth time; the other line is by absorbing the principles that are embodied in the highest forms of literary art, so that one is enabled, by superior tact, skill, judgment, and appreciation, to blaze out a line of work that in matter and form will command and hold the admiration of all who know how to appreciate and to enjoy the beautiful in literature.

However, it is most desirable to influence those who must do their reading chiefly at home, to read the best books and in the right direction. Home reading must furnish the essential basis for all extended education after one has finished his work in school and entered upon that broader sphere of activity in the industrial, commercial, or professional occupations of life. Men and women should be trained along two lines, and each should accomplish its purpose fairly well. The first has for its object the developing of the original powers of the mind so that the possessor shall be quick in observation, active in comprehending and in adapting himself to new and untried situations, clear and free in his thinking, and self-poised in his disposition. On the reflective side of life, he must fortify himself by gathering wisdom from the world's best books so that he may enjoy and participate in the experience of the race. Literature contains this knowledge, the invaluable lessons of human experience.

In reading the biographies of the most noted scholars and philanthropists, one is impressed with the important influence that some book had in shaping the character of each, or in directing his energies into a definite channel of investigation or action. An insight into the methods employed reveals how it was that one trained himself to become a naturalist, and another a writer of books, a linguist, a historian, a poet, a mathematician, or an astronomer. Studies of this kind have done more to stimulate the spirit of investigation, especially along the lines of research, than all other influences combined. It is consequently a matter of much greater importance to get a few of the right kind of books, than it is to have a good teacher whose influence may be only temporary. A book that teaches how a result was reached, indicating the steps in the discovery of a fact and the experiments made, will lead one to depend upon himself far more than when he is told how by a teacher. Such a book is stimulating, because it indicates clearly the entire process from the beginning to the end in the discovery of truth.

A library for home reading should contain different assortments of books—books that incite to reading and that arouse an independent, continuous spirit of self-activity. These books should treat chiefly of the spirit and methods of discovery, and of the processes of development to which each subject belongs. Where one is prepared to view the material world as an unfolding process, and that each fact in the process throws some light on every other fact in connection with the process, knowledge then begins to assume a scientific aspect in a classificatory form. The habit of study which leads to such classification of reading and investigation is invaluable to the young person who is beginning to form habits that will economize life's work. It is doubly important that the one who must map out his own course of reading should adopt a plan that is somewhat scientific in its character and at the same time widening in its scope.

A simple method for gathering a library of books for home reading and progressive instruction is to select books grouped under a few general heads as follows:

The First Division should include history, biography, and ethnology. History and biography relate to the lives of nations and individuals; to the social lives of each; and to the collisions that the nation has had with other nations, or the individual with other individuals, or at times with the popular will. But the most interesting phase of national history is its peaceful relations with other nations in developing and extending commerce in times of peace; the forms of government, the modes of administering justice among the citizens, their manners and customs, social, political, and religious practices—all help one to see those of his own people in the light of others. In studying the less advanced peoples, one becomes familiar with the lives and habits of the backward races and he thus learns to understand their prejudices far better than he who holds himself aloof, and who would reform them by sheer force. One learns, too, how the will of the chief of the tribe or clan controls all those who belong to the tribe or nation. It is in this tribal will that the social will of a nation expresses itself and makes its power felt in books on ethics, social usages, laws, forms of government, and the public and private duties of the citizen. This division includes a large sphere of practical life, and embraces man's relations to his family, state, and humanity.

A Second Division is that of natural history, including nontechnical books on animals, plants, and descriptions of remarkable objects in nature, and especially descriptions of geographical localities, and particularly of travels in various parts of the earth on land and sea. This is one of the most inviting fields to the young, and work in any department of it leads to a wider view of organic nature under all of its phases. It is in this department, too, that the student is most apt to specialize in botany, biology, the weather, agriculture, horticulture, stock raising, or astronomy. He often becomes deeply interested in state and governmental publications of some phases of this large group of miscellaneous subjects.

Third Division. In this division should be embraced such books as treat of physics and chemistry. Under physics, attention should be directed to bodies in mass, whether at rest or in motion, thus giving the learner clear conceptions of statics and dynamics, or of the air, water, light, heat, electricity, and the properties of masses of matter in general. Such knowledge strengthens the reasoning faculties and leads out to a realization of some of the great problems in natural philosophy and astronomy. Chemistry will give a knowledge of those phases of organic and inorganic elements which enter into the structure of compounds, and the processes of combinations and analyses by and through which chemical knowledge has been built up into a great body of scientific information.

A last group of books that may be considered as a distinctive one is that relating to books of literature, and works that make known the beautiful in character, architecture, sculpture, painting, music, prose, and poetry. Literature and art exhibit human nature in the form of feeling, emotions, and higher and more beautiful ideals which terminate in a striving after the good, the true, and the beautiful in life. Such an influence refines human nature, enlivens and vivifies impressions, and results in clearer thought and more lasting impressions in shaping the life after higher ideals.

For Home Reading the student early in life should select his library books chiefly along the lines indicated for culture and general information.

Benjamin Franklin is the central figure in the early history of the United States. His writings are the very opposite, in many respects, of the somber theology of that age. He turned his attention mainly to practical life, dipping, as his time permitted, into scientific and curious subjects. He is associated with men who were destined to act through the Revolutionary period. They are, in the main, men of speech and action rather than authors who would sit down quietly and chronicle events. Yet there is a strong background upon which this striking national peculiarity is deeply engraved. Hallam has sketched the same characteristic in his "Constitutional History of England." It is the same life running down through the sturdy "House of Commons" from the time of James I. to the accession of William and Mary. It is preëminently the liberty-making period, and upon this very account the students of literature, and especially the readers of American history, should be perfectly familiar with *Magna Charta,* the *Petition of Rights,* the *Declaration of Independence,* and the *Constitution of the United States.*

This kind of literature has a firmer hold upon a people than the mere desire to do elegant writing, and the student of literature is impressed with the fact that the literary standard of one age is not the literary standard of all ages, or for any other age, except that particular one in which it is written, unless it be a crystallized nation—and crystallization always means death to a living organism.

The political writings of the Revolutionary period were those chiefly of Thomas Paine, who exerted a tremendous influence throughout the colonies. He was preëminently a "war-arouser." Full of fire and enthusiasm, his blows fell with tremendous force. But for the inside thoughts of great men, notwithstanding the estimate of Von Holst, all literature affords no finer examples than the letters of Jefferson and John Adams after both had retired from public life. It is in these revelations that one learns to know these two great men.

"The Federalist" is the constitutional textbook of our country. In it one gets the best and clearest exposition possible of the Federal Constitution as it was understood by its authors. Strange, indeed, that two young men, Hamilton and Madison, one thirty and the other thirty-six, both slight in build, should come forward as the ablest champions of constitutional liberty in America! For an entertaining account of this period in our country's history, the reader is referred to that master work, "The Critical Period in American History," by Professor John Fiske.

During the constitutional convention various propositions were offered and discussed, adopted or rejected, after a session of four months behind closed doors, and as a result of their deliberations, the present Constitution of the United States was submitted for adoption by the people. When it was fairly before the people for ratification or adoption, then it was that men in every state began to pick it to pieces. Even in the convention where it was framed, it was agreed to finally "by a trade" between Massachusetts and South Carolina. The student of American history needs to know all these things before he is in a condition to understand clearly the sectional sentiments of the parties which sprang up in this country afterward. The slavery question was simply an inherited issue, and it was the entering wedge which widened the breach between the two sections more and more, till finally it was settled by the sword.

It is always decidedly refreshing to read a review of a noted man's character and services in which he is dissected skilfully, justly, and honorably. To throw the personal equation entirely aside and to judge of motives in the clear light of reason is a great step forward in ascertaining truth. One point will illustrate this statement. When the lamented Lincoln delivered his famous Gettysburg speech, it fell flat, and so he felt it himself. But some years afterward an Englishman examined it, commented on its simplicity of style, its depth of meaning, and immediately it became classic as well as prophetic. Everybody knew it was a grand thing, then.

Real literature with us begins with Irving, Cooper, and Poe—three men so unlike, and yet, in a sense, two of them, at least, typical products of the country. What a curious contrast to the great men who had taken so active a part in forming the government. With the former it was the intelligence working through the will, actively employed in shaping into form the political, social, religious, legal, and commercial institutions of the country—a grand work from the will side of human nature. Opposite are set Irving, Cooper, and Poe, who work out from the intellect, taking in part of the feelings for a substratum. Each sets himself a different task. In studying each, it is necessary for the reader to put himself as nearly as possible in the place of each of these authors, yet this is rather a difficult task in the case of Poe. The smooth-flowing sentences of Irving, and the strong, deep insight of Cooper, have their charms as well as their pleasure; but who can describe, in a sentence, the wild and horrible, as prefigured in Poe's mind? Poe, as a writer, is much less read than either Irving or Cooper, yet, as a critic, he certainly occupies the highest rank.

N. P. Willis is another charming writer. He is one of the most unique characters in American literature. As a sketchy writer, few are known to excel him. His prose writings are delightful. Though his writings are partially forgotten, yet as a "hurrygraphist," he is without a peer in modern literature. Harriet Martineau, after listening to John C. Calhoun speak, said, "that he would make one believe in predestination." Carlyle, in his cynical way, called John Stuart Mill a "logic chopping machine," and no one can read "A Disquisition on Government" by John C. Calhoun without feeling the powerful force of his logic. He was not a great rhetorician, but a great logician. He and Jonathan Edwards, each in his own specialty, stand as the first logicians that our country has produced. Admitting their premises, their deductions are irresistible.

During the "statesman period," including Clay, Webster, Calhoun, Benton, and Cass, all notable men, the student of constitutional history will gain much from reading their speeches. There appears to be no doubt that so far as exact information was concerned, Benton was the "best posted one" of the galaxy. Literally, we might say—"There were giants in those days;" but should an emergency arise, their equals would be found in the House and in the Senate again. The occasion has much to do in bringing out the latent energies of master minds. Along with this galaxy of statesmen and orators may be mentioned Phillips, Sumner, Choate, Everett, John Quincy Adams, Seward, Stephens, and Lincoln, whose speeches and state papers will always have a permanent value.

Among the earlier historians whose works are of a high order may be mentioned Bancroft, Prescott, Parkman, and Motley, and of the later, Fiske, Schouler, McMaster, and Rhodes. John Bach McMaster actually writes the history of the American people. But to understand fully how our institutions have impressed foreigners, the student should read "Democracy in America," by De Tocqueville, Von Holst's "Constitutional History of the United States," and Bryce's "American Commonwealth."

The development of poetry among the people of the United States has not followed the method of older countries of the world, and only a few poems of a high order have been produced, but a great deal on the average level. A great poem can be written only when the poet is inspired by a lofty ideal. Ideals rule the world of thought as well as of literature. We have a few great but short poems. Bryant's Thanatopsis, written at the age of eighteen, is his best poem. In this respect, he and Macaulay were both at their best early in life. Macaulay's first speech was as great or greater than any of the others delivered. On the other hand, Longfellow's growth was a gradual one. Halleck is known by one poem, "Marco Bozzaris," and George D. Prentice by "The Closing Year." This is one of the finest in our language.

Religion is one of the inherent elements in man's nature. The idea that it is an acquired faculty has no more truth in it than that a desire for food is an acquired appetite. The truth is, that the one is as natural as the other. As Kant puts it, there are three great questions in the world—God, nature, and immortality; or God, man, and immortality. The American mind is preëminently a speculative one, so far as it undertakes to reconcile nature and religion. Our literature is rich in speculative theology, and not a few persons have struck out new theories of doctrine when followers were not numerous and dogmas evoked little thought and less action. Hardly a religious idea has sprung up in any quarter of the globe that some one has not appropriated it here, and sought to found a sect. This movement goes on still. Our institutions invite these exotics, and when they are transplanted, they either take root or die. So far, however, as pulpit literature and pulpit oratory are concerned, our country has produced some of the greatest men the world has ever seen. It is only a short step from religious and social issues to the realm of philosophy. At all times there were a few scholars in the United States who studied philosophical questions, but during the past thirty years the number has multiplied in every state.

In any treatise on American men of letters, Emerson is always destined to occupy a large space. The student turns to him instinctively for inspiration rather than for positive knowledge. He is always helpful, always suggestive. His charm lies in his sweetness, gentleness, and lovableness. To read Emerson is to make one better. His theology is the doctrine of manhood. Amos Bronson Alcott was another typical character. Whether the similarities be found between Plato and the Bible led him to his singular opinions concerning the instruction of the young is still a matter of debate. At any rate, he was a man of singular purity of character.

Charity keeps us from calling Thoreau a crank, and yet there are some traits in his character that one admires. He stood as a protest against the conventional side of life. He was a civilized man who never found a home in civilization. Margaret Fuller's life is one of inspiring interest to the girls of our country. Brains will tell. Her tragic death lends interest to her work. Channing, Dewey, Theodore Parker, Horace Bushnell, Henry Ward Beecher, Phillips Brooks, and other noted clergymen shed additional luster on our religious and political institutions. Their writings need to be studied in order to be thoroughly appreciated.

But the central figure as a writer of fiction is Hawthorne, *the elder*. Certainly Nathanial Hawthorne occupies a unique place in fiction. He painted nearly as boldly as did Dante,—that the one who violates a law is plagued by the return of his own sins upon himself. The outcome of all this philosophy is that of personal freedom and personal responsibility. Just how much of one's writings can be set down as symbolic and how much as literal can never be quite definitely determined; yet Hawthorne seems to mix the two without a conscious effort. His mind was of that peculiar type that it specialized and generalized at the same moment. He had in the very fullest sense what philosophers call insight. He was much more than a clever writer, and yet he does not have that full sweep which takes in all humanity at a single stroke.

Passing to the "Autocrat of the Breakfast Table," his versatility of mind has drawn all English-speaking people closely to him. To say that he is a profound writer on any subject would not be a correct estimate of his ability, but he is always interesting, always genial, never lags, yet, too, there is a ripple of mirth just beneath the surface of every pregnant truth he utters. He reaches the people, and he sets them into quiet, half-repressed chuckles. In reading Holmes one wants to get up every little while and walk across the floor and laugh. He lives in the hearts of the people more fully than any other American author. Every page of his quivers and thrills with human throbs. Going from Holmes to Lowell, the atmosphere changes—not that it is stinging cold or burning hot—but there is a sudden change. It is the difference between all of man's nature on one side and a distant, intellectual criticism on the other. The last element may be fitly described as massive power in repose, but illumined by bright, yet frigid sunbeams of the upper ether. Running down the list one comes to the poet Whittier whom everybody loves. He is one of the men whose influence has made the world wiser, better, and more human and spiritual.

There are many writers now in all departments of literary work, yet some have written well enough for their writings to live and to be read by future generations. Much that is now teeming from the press deserves an early death. A dialect literature can have only a momentary interest and an ephemeral existence. The permanent element of universality, that speaks to all people and through all time, is wanting in dialect writing. It runs in a limited channel, and it soon wears itself out. It starts in well, but dwindles away to nothing. Of course, those possessed of acute insight catch flavors of genuine greatness here and there in such author's productions, but the aroma is so delicate that it never reaches beyond a certain charmed circle. Such writers as Henry James and William D. Howells are not to be classed with those just described. As graceful, polished writers, these two men rank high. In a matter-of-fact way, they get at what they have to say. They may be properly classed as literary men of high working ability.

Buying Books. The person of ordinary means should keep all his school books and then first supply himself with a few choice reference books, and he should always buy books for the solidity of the matter they contain rather than on account of expensive bindings. Two or three of the very best books by recognized authorities on a subject are enough to give the average reader a clear and comprehensive insight of a department of knowledge. One standard book is worth more than a dozen commonplace ones treating of the same topic. Books should be chosen with as much care and judgment as one ought to exercise in choosing his lifelong friends. See **American Literature; Canada, Sub-head Literature.**

LITHARGE (lĭth′ärj), the general name of lead monoxide, made by moderately heating metallic lead in a current of air. It has a straw-yellow or reddish color. Litharge is used as a pigment, in making flint glass, and for glazing pottery.

LITHIUM (lĭth′ĭ-ŭm), a rare metallic element discovered in 1807. It is widely distributed in nature, but does not occur in large deposits. Small quantities of it are found in certain mineral waters, in meteorites, in the leaves of certain plants, and with the rare minerals *petante* and *spodumene.* It tarnishes quickly in the air, is one of the lightest of metals, and decomposes with much rapidity when placed in water. The properties of the citrate of lithia are similar to those of the carbonate, hence it is used to some extent by physicians. Compounds of lithium are useful in the manufacture of fireworks, since they give a characteristic red color to a flame. See **Chemistry.**

LITHOGRAPHY (lĭ-thŏg′rȧ-fy̆), the art of producing printed matter from a flat stone on which an engraving or drawing has been made. The art was introduced by Alois Senefelder (1771-1834) in Germany about 1786, where the best so-called *lithographic stone* is obtained. This class of stone is almost the only one suitable for lithographic work, being a variety of fine limestone and having a light cream or gray color. It is formed into plates according to the size wanted, usually several feet square, and may be split easily into sheets of uniform thickness. Afterward it is cut and squared to the size required for a particular engraving. The artist prepares the design to be printed in various ways, but chiefly by engraving it on a prepared stone, by drawing it with a watery ink, or with a solid crayon, and by transferring from an inky design on paper by various means. The usual process is to cover the prepared stone with a greasy substance. This penetrates the stone, and can be removed only by cutting into it as deeply as the greasy substance has entered. The design is prepared by cutting in this manner, then filling with water the portions not covered by grease, after which an inky roller is passed over the stone with the effect that ink adheres to the greased parts, but is repelled by the portions moistened with water. In pressing the paper against the surface of the stone the inky surface transfers an impression of the design drawn by the artist.

Boiled linseed oil is used commonly in preparing the greasy surface for lithographic work, and split diamonds are employed for preparing the script and finer lines, though these are made after the heavier designs have been engraved. The delicate tints and shades are obtained from fine parallel lines, numbering from 75 to 100 to the inch. Products similar to those secured by lithographing are obtained from zinc plates, when the process is called *zincography.* It possesses the advantage that plates prepared of zinc are less liable to breakage and are more easily portable than stone. *Chromolithography* is the art of producing lithograph pictures in the natural colors, which is done by making separate stones, there being as many different stones as tints desired, the number varying all the way from two to thirty. *Photo-lithography* is the process in which a photographic negative is transferred to the stone plate. This process is utilized in producing maps, plans, outlines, and various other matters.

Within recent years attempts have been made to utilize aluminum in lithography in place of the ordinary lithographic stone. It possesses the advantage of being lighter, takes drawings without much resistance, and, after being used, it may be melted and made to serve again by rerolling. The lithographic stone has been imported more or less by all countries from Solenhofen, Bavaria, on account of which the price has been quite high, thus supplying another reason why zinc or aluminum has been used to a larger extent than formerly. The United States is becoming a large producer of lithographic stone. It is found in Utah, Tennessee, Kentucky, and several other states, the production in Utah being the most important.

LITHOTOMY (lĭ-thŏt′ō-my̆), the surgical operation of cutting for stone in the bladder. Before resorting to so serious an operation the surgeon usually looks for evidence of stone in addition to the ordinary symptoms, which is done by a process known as *sounding* the patient. This consists of introducing a metallic instrument through the urethra, by which the stone may be heard and felt. The main operation, when properly performed, does not require more than three or four minutes. The wound in favorable cases heals in about thirty days. Operations of this kind are restricted almost exclusively to the male sex.

LITHUANIA (lĭth-ů-ā′nĭ-ȧ), a republic of Europe, bordering on the Baltic Sea, established as an independent country in 1919. In the 11th century it constituted a grand duchy, but in the 14th century it was annexed to Poland. The first dismemberment of Poland, in 1772, caused the region to be divided and transferred to its present dependency. The area is about 33,000 square miles, of which all but 6,750 square miles belonged to Russia, and the latter portion was German territory, being a part of the kingdom of Prussia. The Lithuanians are classed with the Indo-Europeans. They are of a peaceable disposition, have fair features, blue eyes, light skin, and engage principally in agriculture and stock raising. In religion they are largely Greek and Roman Catholic. They are noted for their liberal support of schools and educational arts. In the beginning of the last century they began to acquire titles to land by purchase, being aided by government grants, and now own many fine stock, cereal, and dairying farms. The language spoken is related to the Old Prussian or Lettic. Their literature includes many religious works, some important history, and numerous popular songs and hymns. It is rich in legends and folklore. The legends are especially rich in primitive tales and fables. This region was captured by the Germans in 1915 and held by them throughout the contest. Population, 1928, 2,286,368.

LITMUS (lĭt′mŭs), a vegetable color obtained from several species of lichen. It is used in chemistry to test the presence of acids and alkalies. Acid changes the blue color of litmus to red, and the red color is again changed to blue on being mixed with an alkali.

LITTLE CROW, a chief of the Sioux Indians, born near Saint Paul, Minn. He first attracted attention in 1862 by inciting an insurrection among the Indians. The uprising extended along the upper course of the Minnesota River, where about 1,000 men, women, and children were slain. Gen. William H. Sibley met the forces of Indians at Wood Lake on Sept. 23, 1862, and after defeating them took 2,000 prisoners. Forty of the leaders were hanged, and the others were removed to the Missouri River, but Little Crow escaped. In 1863 he led a raiding expedition and was shot near Hutchinson, Minn. The Minnesota Historical Society has his scalp among its collections.

LITTLE FALLS, a city and the county seat of Morrison County, Minnesota, on the Mississippi River, 95 miles northwest of Minneapolis. It is on the Northern Pacific Railroad and is surrounded by a farming and lumbering district. The Mississippi River supplies an abundance of water power. Among the chief buildings are the county courthouse, the public library, the high school, an orphan asylum, and Saint Gabriel's Hospital. The manufactures include flour, paper and pulp, brick, machinery, and lumber products. It was first settled in 1849 and incorporated in 1889. Population, 1920, 5,500.

LITTLE FALLS, a city of New York, in Herkimer County, on the Mohawk River, 21 miles southeast of Utica. It is on the Erie Canal and on the West Shore and the New York Central railroads. Good water power is obtained from the river, which flows through a rocky defile and forms a number of cascades. It has a public library, municipal waterworks, pavements, and a city hospital. The manufactures include flour, woolen goods, bicycles, hardware, and machinery. It has a large trade in farm produce and merchandise. The first settlement was made in 1782, but it was destroyed by Tories and Indians, and it was resettled in 1790 by a colony of Germans. Population, 1905, 11,122; in 1925, 12,428.

LITTLEJOHN (lĭt't'l-jŏn), **Abram Newkirk,** clergyman, born in Florida, N. Y., Dec. 13, 1824; died Aug. 1, 1901. In 1845 he graduated at Union College and soon after became a pastor of the Protestant Episcopal church. He was rector of Saint Paul's church, New Haven, in 1851-60, and in the latter year accepted a call of the Holy Trinity church, Brooklyn, N. Y. For ten years he served as lecturer on pastoral theology at Berkeley Divinity School, Middletown, Conn. In 1868 he was elected bishop of Long Island and was appointed, in 1874, to take charge of the American Episcopal churches in continental Europe, in which office he consecrated the Church of Saint Paul's at Rome and opened an American church in Paris. His writings include "Philosophy of Religion," "Christian Ministry at the Close of the Nineteenth Century," and "Individualism."

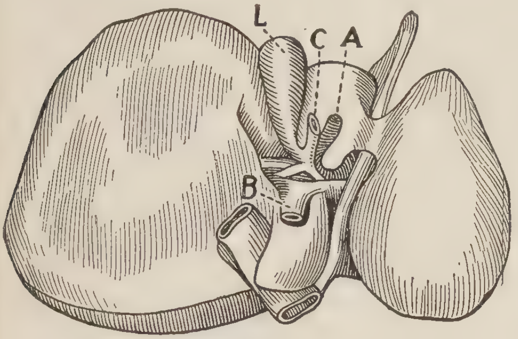
LITTLE ROCK, a city and the capital of Arkansas, county seat of Pulaski County, on the Arkansas River, 130 miles southwest of Memphis, Tenn. It is on several surfaced highways and the Missouri Pacific, the Southern, the Saint Louis Southwestern, and the Chicago, Rock Island and Pacific railroads. The site extends over a rocky bluff, about fifty feet above the river, and is noted for its beautiful and healthful location. Many of the streets are well graded and substantially paved with stone, brick, and asphalt. The principal buildings include the State Capitol, the Philander Smith College, the Arkansas Female College, a Roman Catholic academy, the Cathedral of Saint Andrews, the Federal building, the county courthouse, the Arkansas Military Academy, and many fine hotels and hospitals. Among the manufactures are cotton and woolen goods, furniture, cotton-seed oil, ironware, clothing, wagons, and machinery.

Little Rock is surrounded by a cotton and fruit growing district. It has a large local and wholesaling trade in merchandise and produce. The first settlement was made in the vicinity in 1814 and soon after it became the seat of the territorial government. It was incorporated in 1831. A Union army under General Steele captured it in 1863. Population, 1900, 38,307; in 1920, 64,997.

LITTLE TURTLE, a Miami Indian chief, remarkable for his intellectual strength and skill in war. On Oct. 22, 1790, he commanded an Indian force that defeated General Harmar on the Miami and on Nov. 4, 1790, gained a victory over General Saint Clair at Saint Mary's. He concluded peace with the whites in 1795 by signing the Treaty of Greenville, by which large tracts of land in Ohio were opened for settlement. In 1797 he met President Washington and several other high officials at Philadelphia. His death occurred July 14, 1812, at Fort Wayne, Ind.

LITURGY (lĭt'ŭr-jȳ), the name of a form of Christian worship, applied especially to the celebration of the Lord's Supper. The Protestant churches in general use a form known as the vernacular liturgy, which has been in use in nearly its present form since the Reformation. The English Book of Common Prayer contains the form of communion service used in the Anglican churches, and the Protestant Episcopal church in America has substantially the same form, which was adopted by a general convention held in 1789. It contains a number of changes from the liturgy of the English church, but the form of service is substantially the same. It provides for Scripture reading, a sermon, and a prayer, and these are followed by prayers and the administering of the consecrated bread and wine. The liturgies in general use may be divided into five groups, of which three are of Eastern origin and use, one Eastern in origin but Western in use, and one Western both in origin and use. They are known either by the names of the apostles with whom they are connected, or by the names of the countries in which they are believed to have been in use from an early date. The *Syrian rite* is in use in the Maronite Church of Mount Lebanon. The other Eastern rites are known as the *Persian* and the *Egyptian,* the former being in use by the Nestorians and the latter by the Copts. The Greek and Russian churches use the *Byzantine rite,* and the Roman Catholic church uses the the *Latin liturgy.*

LIVER, a large glandular organ situated in the upper abdominal cavity of vertebrates, whose function is to secrete bile, elaborate and store up glycogen, and otherwise change the blood that passes through it. The liver is the largest organ in the human body. It is situated on the right side, below the diaphragm, and weighs about four pounds. Its general form is broad, flat, thin at the left side, and thick toward the right. It has an arched upper surface, but the lower surface is irregular, divided into five lobes, and its tubes contain nearly one-fourth of the blood of the body. Arterial blood is brought to the liver by the hepatic artery A, directly from the aorta, while the portal vein B conveys to it venous blood from the stomach, intestines, pancreas, and spleen. The bile, a substance necessary to life in the digestion of food, is a dark golden colored liquid of bitter taste, and when not needed for digestion is stored in the gall cyst L, with which the bile duct C communicates. About three pounds of bile are secreted per day.



HUMAN LIVER.

The diseases of the liver include *hepatitis, jaundice, cirrhosis, acute yellow, atrophy,* and *fatty degeneration.* Diseases of the liver are accompanied by a yellowish complexion of the skin, owing to imperfect or inadequate bile secretion. The lower animals apparently have no liver, but rudiments of a similar organ appear in forms quite low in the scale of life. All vertebrates, except the lancelet, have a well-defined liver. This organ is found in many of the invertebrate animals. As we ascend the scale of animal life the liver assumes perfect form with much rapidity, and in the higher vertebrates it is very similar to the liver of man. See **Bile; Digestion.**

LIVERMORE (lĭv′ẽr-mōr), **Mary Ashton Rice,** authoress and lecturer, daughter of Timothy Rice, born in Boston, Mass., Dec. 19, 1821; died May 23, 1905. She studied at the Young Ladies' Seminary of Charlestown, taught school at Duxbury, and married D. P. Livermore, a Universalist minister. In 1862 she became an agent of the United States Sanitary Commission, traveling through various parts of the country, visiting hospitals and sanitary societies, and in 1863 aided in organizing the Northwestern Sanitary Fair in Chicago. Subsequently she lectured on temperance and other reforms, advocated woman suffrage, and in 1870-71 edited the *Woman's Journal.* Her writings include "Thirty Years Too Late," "Pen Pictures," and "My Story of the War."

LIVERPOOL (lĭv′ẽr-pōōl), the most important seaport of Great Britain, in Lancashire, England, on the Mersey River, three miles from the Irish Sea. Next to London and Glasgow it is the largest city of the British Isles. It has extensive railroad connections, uniting it with all the trade emporiums of England and Scotland. The city is supplied with modern municipal facilities, including telephones, gas and electric lights, sewerage, pavements, public parks, and electric street railways. The wharves and docks are commodious and extensive, and are crowded with vessels that communicate with all parts of the world. Many of the thoroughfares extend from the margin of the river to the higher land some distance inland, where the general elevation is about 250 feet. They are mostly platted at right angles and kept remarkably clean in the better residential quarters. In several parts of the city are elevated railways.

Liverpool is generally well built. The noteworthy buildings include Saint George's Hall, the free public library, the Walker Art Gallery, the townhall, the Picton Lecture Hall, and the union railway station. It is the seat of the Liverpool College, Queen's College, Liverpool Institute, and University College; the last named has sixty professors and 750 students. It has many business colleges and schools of law, art, medicine, engineering, and charitable and benevolent societies. The places of worship are very numerous, a total of about 400 buildings, and represent all of the leading Christian denominations. It has many fine monuments, statues, boulevards, and public parks. Among the manufactures are cotton and woolen goods, spirituous liquors, cordage, ironware, sugar, clothing, chemicals, steamships, tobacco, and machinery. It is noted as the principal port for the departure of emigrants from Great Britain. The export and import trade is very extensive, and embraces all classes of products produced and consumed in the United Kingdom.

Liverpool was founded in 1190. At the middle of the 14th century it had a population of 840, but in 1561 it had declined to only 690. In 1647 it was made a free port, from which time its prosperity dates, being stimulated especially by its large trade in cotton. Docks were not built until 1700. Since then the dockage capacity has been enlarged until at present these improvements include a large area of water surface. The more recent improvements of value in promoting growth include the construction of a railway tunnel, in 1885, under the Mersey, by which connection is formed with Birkenhead; the opening of a ship canal to Manchester, in 1894; and the construction of an overhead railway in the same year. Politically Liverpool is strongly Conservative and sends nine members to Parliament. Population, 1921, 786,566.

LIVERWORT (lĭv′ẽr-wûrt), the name of any plant belonging to certain cellular cryptogams, comprising one of the two suborders of the *bryophites*, the other suborder being the *mosses*. The liverworts rank next to the lichens, and in a higher development of their several organs are closely related to the true mosses. They grow in damp places, either on the ground or on trees and decaying wood. The tissue is closely cellular. They have an axis or stem which sends out roots from its under side, which is furnished with distinct leaves, or with leaves so intimately united to each other as to assume the form of a frond. The reproductive organs, differently situated in different species, are of two kinds, known as the *sexual* and *asexual*. The liverworts are native to all climates where there is sufficient shade and moisture. They are of very little known utility from an economic point of view.

LIVINGSTON (lĭv′ĭng-stŭn), a city of Montana, county seat of Park County, 122 miles southeast of Helena. It is finely located on the Yellowstone River and the Northern Pacific Railway, and a branch line extends to Yellowstone National Park, the entrance to which is about thirty miles south of Livingston. Electric lighting, waterworks, and several fine school buildings are among the public improvements. The surrounding country has large interests in farming and mining, hence it is the center of considerable trade in live stock, merchandise, coal, and lumber. It has a fine railway depot and extensive roundhouses and machine shops. Population, 1900, 2,778; in 1920, 6,626.

LIVINGSTON, Edward, statesman, born at Clermont, N. Y., May 26, 1764; died May 23, 1836. He studied at Princeton and established a successful law practice at New York City. In 1794 he was elected to Congress as a Democrat, serving consecutively for six years, and while in the national legislature he was prominent as an opponent to the Alien and Sedition laws. He was elected mayor of the city of New York in 1801, but resigned on account of a shortage in his accounts through the dishonesty of several public officials, and in 1803 settled in New Orleans, where he engaged in the practice of law. In 1820 he was elected to the Legislature of Louisiana and two years later became a member of the Lower House of Congress, serving until 1829, when he was chosen a United States Senator. President Jackson appointed him Secretary of State in 1831 and two years later made him minister to France.

LIVINGSTON, Philip, American patriot, born in Albany, N. Y., Jan. 15, 1716; died June 12, 1778. He graduated at Yale College, entered a mercantile business in New York, and served as a member of the Provincial Assembly in 1758-69. In 1774 he was a delegate to the Continental Congress, and as such was a signer of the Declaration of Independence. He gave much support to philanthropic projects and sold part of his property to sustain public credit during the Revolution.

LIVINGSTON, Robert R., statesman, born in New York City, Nov. 27, 1746; died Feb. 26, 1813. He was a brother of Edward Livingston (q. v.). In 1765 he graduated at King's College (now Columbia), and began a successful law practice. He was an official in the city of New York for some years and in 1775 became a member of the Continental Congress, in which he served on the committee that reported favorable to the Declaration of Independence. In 1781 he was made Secretary of Foreign Affairs, serving until 1783, and in 1788 took part in the State convention of New York which adopted the Constitution of the United States. He became minister to France in 1801 and in that capacity rendered valuable services in promoting the purchase of Louisiana. Later he aided Fulton in perfecting steam navigation, introduced the merino sheep into the United States, and did much to extend the use of gypsum as a fertilizer.

DAVID LIVINGSTONE.

LIVINGSTONE, David, missionary and explorer, born near Glasgow, Scotland, March 19, 1813; died at Ilala, Africa, May 1, 1873. He was the son of Neil Livingstone, a man of humble family, and when David was ten years of age he left the village school and engaged as a laborer in a cotton mill. His natural fondness for study caused him to devote all his leisure time to reading. Later he attended a night school, and at the age of 23 was qualified to undertake a college course. After attending classes in medicine and Greek at Anderson's College, he studied theology, and in 1838 was accepted by the London Missionary Society as a missionary to Africa. On Nov. 20, 1840, he sailed for Africa and on July 31 of the following year joined the settlement made by Robert Moffat in South Africa. His field of labor for the first nine years was in the Bechuana territory in connection with Robert Moffat, and while there he married Mary Moffat, daughter of the latter. His desire to penetrate and operate in the Transvaal Republic was opposed by the Boers, but he proceeded northward, where he discovered Lake Ngami and the fertile regions, traversed by numerous streams, that lie near the lake.

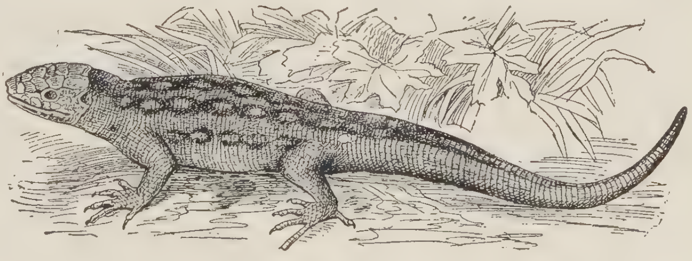
In the spring of 1852 Livingstone entered upon a great exploring expedition for the purpose of visiting many regions lying between the Indian and Atlantic oceans, an enterprise which he completed in four years. Shortly after he resigned as missionary and returned to England, where he wrote his "Missionary Travels in South Africa," published in 1857. While on this visit home he came in contact with various prominent statesmen and educators, many of whom gave him encouragement, which soon after led to his appointment by Queen Victoria on a commission to explore the basin of the Zambezi. He reached the mouth of the Zambezi on May 14, 1858, and not only explored the river and its tributaries, but discovered Lake Nyassa. On July 23, 1864, he returned to England, where he published his second work, entitled "Zambezi and Its Tributaries." In this work he called attention to the evils of the Central African slave trade, and various matters of interest regarding the resources of the country, with the design of securing better equipments for a tour of exploration.

He was now fitted out by the Royal Geographical Society with the special view of settling disputes regarding the sources of the Nile. His tour from Zanzibar was begun on March 19, 1866. After penetrating westward and thence northward, he reached the vicinity of Nyassa and Tanganyika, discovering the lakes Bangweolo and Moero and the sources of the Congo, thus disposing of a dispute that had perplexed geographers for many years. Communications regarding his welfare were not received for three years, but Henry M. Stanley, a correspondent sent by the New York *Herald* to find Livingstone, published a report by which all fear was allayed. The two parted in 1872 and Livingstone remained to explore the southern regions of Tanganyika, but died the following year. The remains were brought to England on April 18, 1874, and buried at Westminster Abbey.

LIVRE (lĭ′vẽr), the name of a coin formerly used in France, but superseded in 1895 by the franc. It had a value of 81 as compared to the value of 80 francs. The same name was applied to a weight in France, which had a value of 17.267 oz. avoirdupois, but which was superseded by the kilogram.

LIVY (lĭv′ĭ), **Titus Livius,** Roman historian, born in Padua, Italy, in 59 B. C.; died in 17 A. D. He was favored by an early training that made him a skillful rhetorician, and at middle life began his celebrated history. This great work included 142 books, but only 35 are extant. Tables of contents of all the lost books except two are in existence, from which many material facts have come to light. The history as given in the first ten books treats of the period from the foundation of Rome, in 753 B. C., to 292 B. C., and gives a record of the Second Punic War. A history of the city, embracing the period from 219 B. C. to 201 B. C., is given in the volumes included from the twenty-first to the forty-fifth, and other books bring the history down to the year 167 B. C. The historical writings of Livy are commendable from the standpoint of construction, rather than as an exhibit of facts. It was his purpose to portray elaborately historic events for the purpose of glorifying his country rather than to spend time investigating facts and giving an authentic and reliable record.

LIZARD (lĭz′ẽrd), the popular name of an order of reptiles which have four well-developed limbs, each terminated by five toes of unequal length, and an elongated body. Many species are included in the order, the entire list embracing about 1,500. Fifteen genera have been described. They frequent regions from the Equator to high latitudes in the Temperate zones. In the tropical regions they are the most numerous and attain the largest size. The length of the body varies from a few inches to three or four feet. Some species are carnivorous in habit and feed on insects, small quadrupeds, and birds, but others live wholly by feeding on plants. The tail is long and powerful in most lizards, and this organ, like the legs, is reproduced in case it is lost. They propagate by laying eggs, which are hatched without care of the parents. The color is very various, most species having bright markings. A kind of lizard native to Mexico and Arizona is poisonous, the poison being connected with a grooved tooth, but all others are devoid of poison glands. The



LIZARD.

different families of the order embrace the iguanas, chameleons, skinks, and geckoes. In the winter time and during cold weather they are in a torpid state, but manifest much activity during the season of warmth.

LLAMA (lä'må), a ruminating quadruped closely allied to the camel, native to the southern parts of Peru and other sections of South America. Writers usually classify the llama, alpaca, vicuna, and guanaco as allied species, the former two being domesticated in large numbers and the latter living mostly in a wild state. The llama is noted for its faithfulness in carrying commodities on its back and because of its ability to forage for its support, on account of which it is utilized in Peru and Chile as a beast of burden. The height is about three feet at the shoulder, and the color diversified, but usually is whitish or blackish. It has ability to travel about fourteen miles a day with a hundredweight across mountain districts. The hair is used in the manufacture of coarse material, and the flesh of young animals is valued for table use. Herds of llamas still frequent the plains of Patagonia and various places in the Andes Mountains, where they are hunted.

LLAMA.

LLANOS (lä'nōz), the name applied by the Spanish to the level plains in the northern part of South America. They are situated principally in the basin of the Orinoco and in Colombia. In many places they are quite barren, but in some localities are good pasture and timbered areas. Similar plains are known as *pampas* in the southern part of that continent and as *savannas* in North America.

LLOYD (loid), **Henry Demarest,** author, born in New York City in 1847; died in 1903. He studied at Columbia University and in 1869 was admitted to the bar. In 1872-85 he was correspondent and editorial writer for the Chicago *Tribune.* In 1890 he published "A Strike of Millionaires Against Miners," the material for which was gathered largely from the labor troubles at Spring Valley, Ill., in 1889. The Standard Oil Company and its methods were treated in the work entitled "Wealth Against Commonwealth." Other publications include "Factories and Farms in Great Britain and Ireland," "Labor Copartnership," "Notes of a Democratic Traveler in New Zealand."

LLOYD-GEORGE. See **George, David Lloyd.**

LLOYD'S, a vast corporation of London, having offices in the London Royal Exchange, so named because the early members met in a coffeehouse conducted in the 17th century by Edward Lloyd. The business of the corporation is to write insurance, collect and publish information in relation to commerce, and furnish a library, restaurant, and suitable quarters for ship auctions. Membership is solicited with the understanding that those joining give security to discharge liabilities, and the general affairs are under the direction of a committee. The marine and general insurance carried by the company amounts to an average to about $2,250,000,000. Among the publications are the daily *Lloyd's List,* the annual *Lloyd's Register of Foreign Shipping,* and several others.

LOADSTONE (lōd'stōn), or **Magnetic Iron Ore,** a mineral remarkable for its high magnetic quality. It consists of protoxide of iron mixed with peroxide of iron. It is found in primitive rocks, but sometimes in grains. The highly magnetic property caused the ancients to believe that it possesses a magical or divine effect, until the phenomena of magnetism became better understood. See **Magnet.**

LOAM, a mixture of various earths, but consisting principally of sand and clay, the latter predominating. With loam formations occur deposits of decayed animal and vegetable matter. Upon the proportion of the latter depends in a large measure the fertility of the soil.

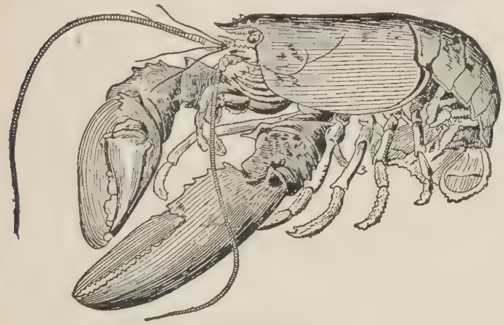
LOANAD (lō-än'då), **Saint Paul de,** a town of Angolia, a Portuguese possession of Western Africa, noted as a trading center. The noteworthy buildings include those of the government, a number of churches, a governor's residence, and a bishop's palace. The harbor is shallow, making it impossible for the larger vessels to reach nearer than one and a half miles from shore. It has several improved streets, modern municipal facilities, and railroad connections with interior points. Coffee, hides, ivory, palm oil, and grain are exported. About one-third of the inhabitants are Europeans. Population, 1922, 22,208.

LOBANOFF-ROSTOFSKY, Prince, statesman and diplomat, born in Rastoff, Russia, Dec. 30, 1834; died at Scheptowka Station, Austria, Aug. 30, 1896. He descended from a leading family, secured a good education, and in 1854 entered the Russian diplomatic service. In 1878 he became ambassador to Constantinople, was transferred to London the following year, and in 1882 was made ambassador to Vienna, where he remained thirteen years. His service at these important courts was highly efficient, and in 1895 he was made minister of foreign affairs. In that position he rendered valuable service in effecting a peace treaty between Servia and Bulgaria.

LOBELIA (lō-bē'lĭ-ȧ), a genus of herbs of the natural order *Lobeliaceae*. It includes many species that are widely distributed in various parts of the earth, but especially abundant in the tropical regions of America. They contain a milky juice, have alternate leaves, and produce many-seeded pods. The flowers and foliage are very beautiful. Several species possess medicinal properties useful for an expectorant and cathartic. The drugs obtained from these plants are prescribed in various doses for spasmodic asthma and as diuretics. When handled in a dry state, the herb irritates the throat and nostrils like tobacco. The medicinal preparations are known as the *tincture* and the *ethereal tincture* of lobelia.

LOBLOLLY PINE (lŏb'lŏl-lȳ). See **Pine.**

LOBSTER (lŏb'stẽr), a marine crustacean which resembles a crawfish, but is much larger. The common lobster of America is a typical species. It is ten-footed, has a long tail, is stalk-eyed, and often attains a weight of ten pounds. It is widely distributed in America, occurring in large numbers off the New England and New York coasts, but also in other waters of America and elsewhere. The front legs, which occur in pairs, are much enlarged and form the claws. Lobsters mostly frequent rocky coasts, feed on other animals, and have a bluish or greenish colored shell, which becomes red by boiling. The tail spreads like a fan, is constituted of a number of flat plates, and serves in propelling the animal through the water. The young are able to swim with much rapidity, but the adults walk or crawl, and the molting occurs annually in adults. They are caught in baited traps for the market and are considered excellent food, the principal edible parts being the tail and claws. The season for catching is from the early part of October until May.



LOBSTER.

LOBWORM, or **Lugworm,** the name of a worm found in Europe and North America, used extensively for bait in fishing. It has a round head without eyes or jaws, and in size resembles the earthworm. It is found chiefly along the seashore, where it burrows in the sand, and its presence may be ascertained by noticing small coils of sand left while burrowing.

LOCAL OPTION, a term used in civics to express the right of determining certain measures of government by popular vote in each locality of a state or province, such as a county, township, or city. The term has come into extensive use in relation to the liquor traffic, and is applied to the system whereby each community may decide by vote whether or not the traffic may be licensed and maintained. In some states the local option is by petition, but it is exercised more commonly by an election.

LOCH LEVEN (lŏk lē'vẹn), a lake in the southeastern part of Scotland, 23 miles northwest of Edinburgh. It has an area of 3,410 acres, is surrounded by prominent elevations, and drains to the Firth of Forth by the Leven. The lake has fine trout fisheries and several islands, the most important of the latter being Castle Island and Saint Serf's Inch. Mary, Queen of Scots, was imprisoned for ten months on one of these islands in 1567-68, and on July 4, 1567, signed her abdication.

LOCH LOMOND (lō'mŭnd), the largest lake of Scotland, in the counties of Dumbarton and Stirling. It is surrounded by beautiful hills, has a number of wooded islands, and is noted for its excellent scenery. The length is about 22 miles and the breadth is from one to five miles. In its vicinity are several noted caves. Fifteen miles southeast of Loch Lomond is the city of Glasgow.

LOCK, an inclosure in a canal where boats are raised and lowered for the purpose of passing them from one level to another. It consists of a basin between the levels, having a pair of gates at each end communicating with the respective levels. In descending from a higher to a lower level the water is allowed to flood the lock until it reaches a common level with the water in which the vessel is located and, after the vessel enters, the lower gate is opened, whereby the vessel is lowered to a level corresponding to the surface of the next lower lock, and again moves forward. This operation is continued until the vessel is brought to the common level of the canal. When the boat is to attain a higher elevation, a process directly opposite is pursued. It would be quite impossible to build canals in many regions if it were not that a system of locks could be utilized.

LOCK, a fastening which has a bolt that is moved by a key, used to secure a door, lid, or other object against intrusion. Many different classes of locks are in use, depending upon the size and the character of the inclosure which is to be protected, and some of them date from the time of the Egyptians and Babylonians. For many years it was a matter of deep study to find how to construct a lock that no one could open unless he had a proper key. The first lock of this character was known as a combination lock and could be opened only by the proper key, after turning a knob on the outside for the purpose of placing the interior bolt in such a position that the key could be made to turn effectually. In 1820 an American inventor, Linus B. Yale, patented a lock that is combined with a clock mechanism, and by means of it the combination locks are so constructed that they can be opened only at a specified time. The time locks and Yale locks with special keys are the ones used most extensively where large treasures and valuables are stored.

LOCKE, David Ross, humorist, better known as Petroleum V. Nasby, born in Vestal, N. Y., April 20, 1833; died in Toledo, Ohio, Feb. 15, 1888. He learned the trade of a printer at an early age, was connected with several periodicals in Ohio, and in 1860 became editor of the Findlay *Jeffersonian,* in which he published various articles over his pseudonym. In 1865 he purchased the *Toledo Blade* and made it highly popular by satirizing President Johnson in his reconstruction policy. He became editor of the New York *Evening Mail* in 1877, but a few years later returned to Ohio. His publications include "Swingin' Round the Circle," "Opinions and Prophecies of Yours Truly," and "Nasby in Exile."

LOCKE, John, author and philosopher, born in Somersetshire, England, Aug. 29, 1632; died Oct. 28, 1704. He studied at Westminster School, entered Oxford in 1661, and in 1664 became secretary to the British envoy at Berlin. Soon after he returned to Oxford to receive his degree and afterward took a course in medicine, but subsequently became devoted principally to philosophy. Lord Shaftesbury selected him as secretary in 1672, in which capacity he drew up a constitution for the province of Carolina, but this was rejected on account of its liberality in religious affairs. When the Earl of Shaftesbury left England as an exile, in 1682, Locke accompanied him to Holland, where he studied and investigated various philosophic questions. He returned to England five years later and there finished his celebrated work, "Essay on the Human Understanding," which he had begun seventeen years before. After the revolution he obtained the position of commissioner of appeals at a salary of $1,000 a year, in which he maintained the principles of reform by an active interest in the cause of liberality. King William appointed him commissioner of trade and plantation in 1695, but on account of feeble health he soon after resigned and made his home with Sir Francis Masham, at Oates, in Essex, where he died.

The writings of Locke had a marked influence upon the thought of his time, many of them being widely translated and studied in various countries. In his work on psychology he opposes the theory of an innate idea, and assumes that the mind may be likened to a blank page on which ideas are written by experience; sensation and reflection being the sources of all our ideas. His principal writings, besides the one named above, include "Method of a Commonplace Book," "Letters on Toleration," Treatises on Government," "Reasonableness of Christianity," "Conduct of the Understanding," and "Notes upon Saint Paul's Epistles."

LOCKHART (lŏk'ärt), **John Gibson,** author, born at Cambusnethan, Scotland, July 14, 1794; died Nov. 25, 1854. He studied at Glasgow University and Balliol College, Oxford, and in 1816 was admitted to the bar. His literary career began in 1817, when he made a tour of Germany and gathered the material for contributions to *Blackwood's Magazine.* He married Sophia Charlotte, the eldest daughter of Sir Walter Scott, in 1820. Soon after he became editor of the *Quarterly Review,* London, which he increased in popularity through his literary efforts. His books include "Spanish Ballads," "Life of Burns," "Valerius, a Roman Story," "Life of Napoleon Bonaparte," and "Life of Sir Walter Scott."

LOCK HAVEN, a city in Pennsylvania, county seat of Clinton County, on the Susquehanna River, 28 miles above Williamsport. It is on the Pennsylvania and the New York Central railroads and is surrounded by a rich farming and coal-mining country. The chief buildings include the county courthouse, the public library, the city hall, and the Central State Normal School. Among the manufactures are machinery, fire brick, paper, leather, and earthenware. Pavements, electric lights, rapid transit, and waterworks are among the improvements. It was settled in 1769 and incorporated in 1833. Population, 1900, 7,210; in 1920, 8,557.

LOCKPORT, a city of New York, county seat of Niagara County, twenty miles east of Niagara Falls. It is on the Barge Canal and on the Erie and the New York Central railroads. The manufactures include woolen goods, bottles, ironware, flour, machinery, engines, furniture, brooms, and radiators. Among the noteworthy buildings are the county courthouse, the high school, the Federal building, the Saint Joseph's Academy, and many churches. In its vicinity are productive limestone and sandstone quarries. Lockport was settled in 1825 and incorporated as a village in 1829, but was chartered as a city in 1865. Population, 1925, 21,676.

LOCKWOOD, Belva Ann Bennett, reformer and lawyer, born in Royalton, N. Y., Oct. 24, 1830. She began teaching a district school at the age of fifteen, married Uriah H. McNall in 1848, but was left a widow in 1853. In 1857 she graduated at Syracuse University and studied law at Washington, D. C. She married Ezekiel Lockwood in 1868 and was admitted to the bar in 1873. The Equal Rights party recognized her ability as a public speaker in nominating her for the Presidency of the United States in 1884. She died May 19, 1917.

LOCKYER (lŏk'yẽr), **Joseph Norman,** astronomer, born in Rugby, England, May 17, 1836; died Aug. 16, 1920. He studied extensively and in 1857 entered the war office, but devoted considerable time to the study of astronomy. In 1860 he became a fellow of the Royal Astronomical Society, was elected to the Royal Society in 1869, and the following year was made secretary of the commission on scientific instruction and the advancement of science. He was leader of the English expeditions to study eclipses from 1870 until 1900, and as such contributed much of value to the knowledge of astronomical science. Besides advancing the theory that the heavenly bodies are alike composed of meteorites, he was the first to assume that there exists a relation between the rainfall on the earth and the number of sun spots. Besides contributing to periodical literature, he published "Elementary Lessons in Astronomy," "Questions on Astronomy," "Chemistry of the Sun," "Dawn of Astronomy," "Inorganic Revolution," "Movement of the Earth," "Studies in Spectrum Analysis," and "The Sun's Place in Nature."

LOCOFOCO (lō-kō-fō'kō), the name of a radical faction in the Democratic party of New York, but later extended to an element in that party throughout the nation. It originated from a faction that opposed the rechartering of state and private banks by special legislation and advocated the rechartering of the United States bank. In 1835 there was formed in New York the Equal Rights party and a meeting of its representatives was held in Tammany Hall, of which the regular Tammany Democrats tried to gain control. When the latter found themselves outnumbered, they turned out the lights and retired, but the meeting was continued by the use of candles and locofoco matches. The Democratic newspapers began to call the faction Locofocos, and the name was later given to the whole Democratic party by the Whigs. This party was beaten at the election and through the efforts of President Van Buren became absorbed by the regular organization.

LOCOMOTIVE (lō'kō-mō-tĭv). See **Steam Engine.**

LOCUST (lō'kŭst), the name of several species of trees of the order *Leguminosae.* They have a rough bark, pinnate leaves, and fragrant white flowers, and grow to a height of eighty feet. The wood is pierced extensively by borers, but, when the bark is taken off and it is dried, it is serviceable in fencing, for furniture, machinery, railway sleepers, and in the construction of houses. The honey locust has pink flowers, which have a fine fragrance and grow in clusters. Several trees are closely allied, such as the *carob tree* and the *thorn acacia,* but they differ in minor points. The common honey locust is planted largely as an ornamental tree and for hedges, being suitable to bear trimming and dwarfing.

LOCUST, the name of several species of insects allied to grasshoppers and crickets. The term is applied conjointly by some writers with the name grasshopper to destructive and migratory species of insects common to many portions of the continents. However, the true locust is a distinct kind of orthopterous insect. Two particularly destructive species of these insects are found in America, one in the northeastern part of the United States and Canada, which is more properly the locust, and the other in the regions west of the Mississippi. Those common to the latter region have been especially destructive in parts of Texas, Colorado, Kansas, Nebraska, and Oklahoma at different times, but in recent years they have been less abundant. Species very similar have been known to swarm in vast numbers in various countries of Asia and Africa, darkening the sunlight in their flight. They devour all forms of vegetation. When most abundant in the Mississippi valley, they settled down in some regions in such large swarms that they destroyed all vegetable growth. In some places they accumulated so thickly upon the railways that it interfered with traffic.

The common locust has great leaping power because of its powerful hind legs, which are stronger than those of grasshoppers. They fly with a loud whizzing sound. The eggs are deposited in the earth by the females in the fall of the year and, when warmth returns the following spring, the young are hatched. The *Carolina locust* is pale yellowish-brown, has black wings, and is about one and a half inches long, the extended wings measuring three inches. It flies a considerable distance when it is disturbed by a traveler. The greatest danger to crops is while these insects are in an immature state, for soon after they take to wing and distribute in swarms. They sometimes effect much damage and cause disastrous famines in the regions where they settle.

The Arabs and some other nations use the locusts as an article of food. They are prepared for the table by pounding them into small particles and baking them as bread or frying them as a delicacy in oil. In the island of Cyprus, India, China, and some of the American states preventive measures have been adopted by pulling large tanks of diluted kerosene across the ground. This serves to kill them by the thousands. Another method is to dig pits, lining them with zinc, and after the locusts fall in they are destroyed by fire or in some other way.

LOCY, William Albert, zoölogist, born in

Detroit, Mich., Sept. 14, 1857; died Oct. 9, 1924. He studied at the University of Michigan and at Harvard, and in 1887 became professor of biology in Lake Forest College. In 1891 he was chosen professor of physiology at Rush Medical School, by whose authority he was sent to inspect the University of Berlin, and while in Europe purchased valuable apparatus. He became teaçher of zoölogy at the Northwestern University, Evanston, in 1896. His writings include "Derivation of the Pineal Eye," "Primary Segmentation of the Vertebrate Brain," and "Teaching Zoölogy to College Classes."

LODGE, Henry Cabot, statesman, born in Boston, Mass., May 12, 1850; died Nov. 9, 1924. He graduated from Harvard University, studied law, and in 1876-79 was lecturer on American history in that institution. He edited the *North American Review* from 1873 until 1876 and the *International Review* from 1879 until 1881. After serving in the State Legislature, he was elected to Congress as a Republican in 1886, serving until 1892, and in 1893 became United States Senator, and was reëlected in 1899, 1905, 1911, and 1917. He is noted as an able legislator and a prolific writer. His writings include "Life of Alexander Hamilton," "Studies in History," "Hero Tales from American History," "Life and Letters of George Cabot," "Life of Daniel Webster," and "A Short History of the English Colonies in America."

LODGE, Oliver Joseph, physicist, born at Renkhull, England, June 12, 1851. After attending a grammar school and studying evenings, he took courses at University College, London, where he received a degree in 1875. In 1877 he was made assistant professor of mathematics in the University College, London, and in 1881 became professor of physics in the University College of Liverpool, where he taught successfully until 1900, when he accepted the principalship of the University of Birmingham. His work extended largely into the field of electrical science, making investigations of lightning discharges, the physics of the ether, and electrostatic disturbances. The device known as the *coherer,* which is used in wireless telegraphy, was invented by him, though like inventions were made independently by Edouard Branly, of Paris, and a number of others. In 1902 he was knighted. His writings include "Elementary Mechanics," "Lightning Conductors and Guards," "Modern Views of Electricity," "Pioneers of Science," "Work of Hertz and His Successors," and "School Teaching and School Reform."

OLIVER JOSEPH LODGE.

LODI (lō′dĭ), a city of Italy, in the province of Milan, on the Adda River, nineteen miles southeast of Milan. It is on several railways, has a Gothic cathedral erected in the 12th century, and contains important manufactures of silk and woolen goods, chemicals, and machinery. The old city of Lodi, situated about five miles west, is noted as the place where Napoleon forced the bridge on May 16, 1796, in spite of vigorous firing by the Austrian army. Population, 1922, 27,845.

LODZ (lôdz), a city of Poland, in the Polish government of Piotrkow, on the Ludka River, 78 miles southwest of Warsaw. It is noted as a railroad and educational center, has electric lights and street railways, substantial pavements, public libraries, and a number of parks. The manufactures include cotton and woolen goods, machinery, earthenware utensils, and vehicles. Large quantities of cereals and fruits are produced in the vicinity. The population is principally German. About 60,000 men are employed in the cotton mills. The Germans captured Lodz in 1914 and lost it, but recaptured it in 1915. Population, 1922, 398,875.

LOEB (lĕb), **Jacques,** educator and author, born in Germany, April 7, 1859. After studying in Berlin and Munich, he took an extended course at Strassburg, where he was granted a medical degree in 1884. From 1886 until 1888 he was teacher of physiology at the University of Würzburg and at Strassburg from 1888 until 1890, and in 1891 came to the United States to fill an appointment at Bryn Mawr College. In 1892 he was made assistant professor of physiology at the University of Chicago and in 1900 became professor of that branch of study. He takes high rank as an instructor and is noted for his advancement in scientific research. In 1899 he succeeded in developing larvae from the unfertilized eggs of sea urchins and subsequently made similar experiments with other animals, including worms and the starfish. Several zoölogists have since verified these interesting experiments. Among the writings of Loeb are "Comparative Physiology," "Organization and Growth," "Limits of Divisibility of Living Matter," "Artificial Parthenogenesis," and "Comparative Physiology of the Brain and Comparative Psychology." He died Feb. 11, 1924.

LOESS (lēs), the name first applied to certain loose deposits along the Rhine, in Germany, and later extended to like formations in other countries. It has reference to a loamy or sandy deposit of the Pleistocene age. Loess is usually of a light yellow color and exceedingly fine, and somewhat resembles loose deposits of clay. It is thought that the loess deposits were formed at a time when the streams were broader and more sluggish than at present, and in some instances they are likely due to the action of glacial lakes. In the arid region of North America, extending southward from Alberta and Saskatchewan, these deposits are found in the valleys many hundreds of feet in depth. Along the

Mississippi and Missouri rivers, especially in Iowa, are large bluffs of loess, such as are seen in the vicinity of Council Bluffs and Sioux City. Similar formations are more or less widely distributed in all the continents. As they contain the remains of considerable silt, many of these deposits are quite fertile, but they require more rainfall than loam, owing to their sandy character.

LOFODEN (lô-fō′dẹn), or **Lofoten,** a chain of islands situated northwest of Norway, stretching along the shore a distance of 175 miles. The area is 2,250 square miles. Much of the surface is mountainous, the highest elevation being about 3,500 feet. Among the larger islands are Hindö, Andö, Langö, Vest Vaagö, and Oest-Vaagö. The inhabitants engage largely in fishing and the cultivation of potatoes, oats, and barley. They rear cattle, horses, and poultry. The fisheries yield considerable quantities of cod, herring, lobsters, and oysters. A large trade is maintained in stockfish and cod-liver oil, but most of the fish are sold fresh. The celebrated Maelstrom off Norway is situated in their vicinity, being produced by the Great West Fiord flowing between the islands and the west coast of Norway. The Gulf Stream modifies the climate perceptibly, especially during the summer, and renders it favorable to sheep culture. Most of the inhabitants are Lapps and Scandinavians. Population, 1921, 42,972.

LOG, an apparatus for ascertaining the rate of a ship's speed in the sea. It is usually in the form of a triangular piece of wood, called the *log-chip,* curved at the bottom, and loaded so it may float upright in the water. A strong line is attached to the log-chip, being wound around a reel, the axis of which projects, allowing it to turn freely when held in the hollow of the thumb and fingers. The log-chip is placed in the water and remains at rest, while the ship moves continuously on, and the speed is measured by the rapidity with which the log line unwinds from the reel. The line is divided into sections and the rate at which the vessel sails is determined by the number of sections that pass from the reel in a given time, the time being measured by an hourglass, and the tests cover from twenty to thirty seconds of time. A *log book* is kept on the vessel, which contains a journal of the progress made from day to day, together with events occurring on board, the state of weather, the number and class of vessels sighted, and many other circumstances of interest in the tour. Most ships carry an official log book in which to keep an account of sickness, offenses committed, disobedience of officers, and all general matters pertaining to the crew and passengers.

LOGAN (lō′gạn), a city in Utah, county seat of Cache County, on the Logan River, seventy miles north of Salt Lake City. It is on the Oregon Short Line Railroad and is surrounded by a rich farming and stock-raising country. An abundance of water power for manufacturing is obtained from the river. Among the noteworthy buildings are the State Agricultural College, the New Jersey Academy, the Brigham Young College, the county courthouse, the high school, and a number of churches. It has manufactures of brick, beet sugar, clothing, hosiery, and machinery. The place was settled in 1859 and incorporated in 1866. Population, 1900, 5,451; in 1920, 9,439.

LOGAN, John, chief of the Cayuga Indians, born about 1725; died in 1780. He resided on the Susquehanna River and was friendly to the settlers, but in 1774 his family was massacred on the banks of the Ohio River by a number of whites, which caused him to instigate a war. Great destruction of property and life followed, but he and his band were defeated near the mouth of the Great Kanawha River. Shortly after he addressed a pathetic message to Lord Dunmore, Governor of Virginia, in which he reviewed his wrongs. His death resulted from a misunderstanding, on account of which a party of Indians shot him, presumably in self-defense.

LOGAN, John Alexander, soldier and statesman, born in Jackson County, Illinois, Feb. 9, 1826; died in Washington, D. C., Dec. 26, 1886. He was the son of John Logan, an Irish physician, who served in the Legislature of Illinois as a Democrat. The son attended the common schools and in 1840 studied at a college in Shiloh. At the age of twenty years he enlisted in the Mexican War and became lieutenant in an Illinois regiment. His service in the war was of much merit and for some time he was acting quartermaster of his regiment. Subsequent to the war he entered the Louisville Law School and studied for a time in the law office of his uncle, Alexander M. Jenkins, and soon after was admitted to the bar. He formed a law partnership with his uncle and in 1849 became clerk of Jackson County. In 1851 he was elected to the Legislature to represent Jackson and Franklin counties, was twice reëlected, and in 1854 served as presidential elector on the Democratic ticket. He was elected to Congress in 1858 and was reëlected in 1860, but as soon as the Civil War began he resigned his seat in Congress and enlisted for service in the Union army. His friends urged him to become a candidate for reëlection to Congress in 1862, but he declined, saying: "I have entered the field to die, if need be, for this government." He fought at Bull Run, Belmont, Fort Henry, and Fort Donelson, attaining to the rank of brigadier general in 1862, and, after displaying skill and bravery at Corinth and in the Mississippi campaign, he became major general in the fall of the same year. He took an efficient part in the Battle of Vicksburg and on the battlefield of Atlanta succeeded McPherson in the army of the Tennessee.

In the presidential election of 1864 General

Logan gave vigorous support to Lincoln, making many impressive speeches in the western states. After the election he returned to Savannah, took part in Sherman's march through the Carolinas, succeeded General Howard in 1865 as commander of the army of the Tennessee, and in the fall of the same year resigned from the service. President Johnson appointed him minister to Mexico soon after, but he declined to serve. In 1866 he was elected to Congress as a Republican and was reëlected in 1868 and 1870. He became a United States Senator in 1871 and was elected to the same position in 1879 and in 1885. The Republicans nominated him for the Vice Presidency in 1884, on the ticket headed by James G. Blaine, but he was defeated. General Logan has a fine record as a soldier and statesman. He was one of the founders of the Grand Army of the Republic, became its first national commander, and promoted the observance of Memorial Day as a national holiday. He wrote "The Great Conspiracy" and "Volunteer Soldier of America," the latter being published after his death. His son, John A. Logan, born in Illinois, July 24, 1865, studied at West Point, and rose to the rank of major. On Nov. 12, 1899, while leading his battalion at San Jacinto, Philippine Islands, he was slain by the entrenched enemy.

LOGAN, Mount, one of the highest mountains in North America, in the Dominion of Canada, near the Alaskan boundary, 26 miles northeast of Mount Saint Elias. In 1892 J. H. Turner, United States surveyor, placed its height at 19,514 feet, which is considerably higher than Mount Saint Elias, previously thought to be the most elevated peak in North America. It is exceeded in height by Mount McKinley.

LOGANSPORT, a city in Indiana, county seat of Cass County at the confluence of the Eel and Wabash rivers, seventy miles north of Indianapolis. It is on the Wabash, the Pennsylvania (which has shops here), and two electric interurban railroads. Among the chief buildings are the county courthouse, the public library, the high school, the Holy Angels' Academy, and the Northern Indiana Hospital for the Insane. The municipal facilities include electric street railways, waterworks, sewerage and several parks. It has manufactures of flour, ironware, machinery, woolen goods, clothing, cigars, and farming implements. The surrounding country is a fertile farming and dairying district. It contains natural gas and coal deposits. It was settled in the early part of the 19th century and was incorporated in 1838. Population, 1920, 21,626.

LOGARITHM (lŏg′ȧ-rĭth′m), one of a class of auxiliary numbers which are so related to the natural numbers that the multiplication and division of the latter may be performed by addition and subtraction. They facilitate the raising of numbers to powers and the extraction of roots by very simple multiplication and division. The logarithm of a number may be defined as the exponent of the power to which it is necessary to raise a fixed number, called the *base,* to produce the given number. The labor of performing these operations by the ordinary processes of arithmetic, when the numbers are composed of many figures, is very complicated. By the use of logarithms, for the invention of which we are indebted to John Napier (1550-1617), of Scotland, this labor is greatly diminished. However, several mathematicians have since prepared extensive tables so it is not difficult to perform these operations. In most tables the logarithms are calculated to base 10, but in the system of Napier the base is 2.718281828... The logarithm of 100 is 2, because 10 raised to the second power equals 100. Similarly, the logarithm of 1000 equals 3, of 10,000 equals 4, and so on. When the logarithms form series in an arithmetical progression, the corresponding natural numbers form a series in geometrical progression, thus:

Logarithms	0	1	2	3	4	5
Natural numbers	1	10	100	1000	10000	100000

Between the numbers 1 and 10 the logarithms consist of decimals; between 10 and 100, of the integer 1 and a decimal; between 100 and 1000, of the integer 2 and a decimal, and so on. The integral part of a logarithm is called the *index* and is always less by one than the number of integer places in the corresponding natural number, hence the index of the logarithm of 3 is 0, of 30 is 1, of 300 is 2, etc. The decimal part of a logarithm is called the *mantissa.* The logarithms of decimals have negative indices and the number of units in the index is always greater by 1 than the number of ciphers immediately following the decimal point, hence the index of the logarithm of .3 is —1, of .03 is —2, of .003 is —3, etc. Karl Friedrich Gauss (1777-1855), the German mathematician, invented a system of logarithms which is of great value in astronomical computations.

LOG BOOK, a book kept on board a ship at sea, in which is entered the daily progress of the vessel, with notes on the weather and incidents of the voyage. The velocity of such a vessel is measured by a log, an apparatus constructed of a wooden float, weighted on one side to make it float upright, and the measurements are taken on a line, which is unwound from a light running reel, while the log remains stationary in the water as the ship moves forward. The results of these measurements are recorded in the log book together with other matters of interest, and usually the record is transcribed at noon. A log book is kept on all the vessels of the navy and the record is verified and signed each day. This record, when completed, is properly marked and filed for future reference in the Navy Department.

LOGIC (lŏj′ĭk), the science which treats of the formal laws of human thought. It deals with all the forms of thought, including conception, judgment, reasoning, and construction, and bases its principles on the logical axioms. As understood at present, it is a development and modification of the art of reasoning molded into consistent shape by Aristotle in his treatise entitled the "Organon of Aristotle." This work is based partly on the writings of Socrates, who treated the art in a general way, and notably on the treatises of Zeno of Elea. The Scholastics were the first to develop the logic of Aristotle. They made the art an independent power in great theological debates. At the time of the Reformation, particularly in continental Europe, Scholasticism was depreciated, and down to the first half of the 19th century there was little dispute as to how logic should be defined, but since then have originated many different definitions.

According to Whately and Sir W. Hamilton, logic is limited in its application to the form of thought, and has nothing to do with the matter; that is, it deals with the form common to all reasonings, judgments, and concepts, but is not concerned about the content or subject of either. If this view is held, logic is only *deductive,* but John Stuart Mill founded the system of *inductive logic,* according to which the evidence, methods, and principles involved in scientific research must be regarded the principal subjects of interest in the art. Both the inductive and deductive systems are reviewed by the German philosopher Kant, who recognizes thought as the essential factor of cognition, thus holding the matter and not the form as the paramount element of importance in logic.

The system of Kant is now accepted as a standard, since it holds that thought or intelligence is realized through the system of forms used in logic, thus making thought instead of mere form the basic element in logical procedure. In method of procedure it is either inductive or deductive, the two methods being the reverse of each other. The former proceeds from particulars to the general, the latter from the general to particulars. One is a process of analysis, the other a process of synthesis. Logic is divided according to the forms of thought and expression into logic of concepts, treating of the term; logic of judgment, treating of the proposition; logic of reasoning, treating of the syllogism; and logic of construction, treating of the system.

LOGWOOD (lŏg'wŏŏd), a tree which was originally found in Central America, but naturalized in and exported from Jamaica and other West Indian islands. It grows most vigorously in moist and swampy regions, has pinnate leaves and small yellowish flowers, and attains a height of from thirty to fifty feet. The wood is dense and solid, particularly the heartwood, which is so heavy that it sinks in water. This heartwood has a red color and is useful in the manufacture of dyestuff to produce dark red colors. To obtain the dyestuff the wood is ground into small pieces, after which the coloring matter is extracted, and, by applying alkalies, a purple color is secured, while acids give a paler tint to the red. The colors are not permanent, but are made so by a mordant. When iron is used for mordanting the fabric, the color produced is black, but with chromium a green or black is secured, and with alumina a lilac and violet are obtained. Logwood dyes depend upon the crystalline principle known as *haematoxylin.* They are used largely in giving a black or brown color to calico, in making ink, and for producing colors useful in painting. An astringent medicine is also extracted from logwood.

LOGWOOD, FLOWER AND SEEDS.

LOHENGRIN (lō'ĕn-grĭn), a German poetic hero, being the subject of Wagner's celebrated "Lohengrin." The poem introducing Lohengrin was written in the latter part of the 13th century, according to which he was a guardian of the Holy Grail, and was sent by King Arthur to battle for Princess Elsa of Brabant. The vehicle in which he undertook the journey was drawn by a swan, and, after arriving at the seat of war, he overthrew all opposition and finally married Elsa. Subsequently he entered the campaign against the Hungarians and later against the Saracens, but on his return to Cologne was persuaded by Elsa to explain his origin, on account of which he was immediately taken back to the Grail in accordance with his vow.

LOIRE (lwär), the most important river of France. Its source is in the Cevennes Mountains, from which it has a northwesterly course to Orleans, and thence flows nearly west into the Bay of Biscay. Canals connect it with the Seine, the Saone, and the harbor of Brest. Its basin, which includes about one-fourth of

France, is noted for fertility of soil and much wealth. The entire length is 625 miles, of which about 500 miles are navigable. On its banks are the cities of Nantes, Mayenne, Vienne, and Allier.

LOKI (lō'kĭ), in Scandinavian mythology, the father of Hel, goddess of the dead, regarded the evil spirit. He is represented as being handsome in appearance, but the possessor of great cunning and malice. Though engaged in mischief and evil, he was looked upon as capable of aiding the other gods in the accomplishment of good and noble deeds. Balder lost his life through the malice of Loki, but the latter was terribly punished by the Aesir. At a later period he became identified with the devil of Christianity, who, in Norway, is still spoken of as *Laake*.

LOLLARDS, the name of adherents to a semi-monastic society of the Netherlands. This organization was formed in Antwerp and Brabant about 1300. The chief object was to care for the sick and look after the burial of the dead. The name Lollards was applied to the followers of Wycliffe in England near the end of the 14th century. Oxford was long a central point of influence, whence the Lollards went to the smaller villages to preach a simple gospel. Later they developed certain economic theories of a socialistic nature and were persecuted by the authorities, especially in the time of James IV. of Scotland and Henry V. of England.

LOMBARD (lŏm'bärd), **Peter,** noted schoolman of the 13th century, born near Novara in Lombardy, in the year 1100; died in Paris, France, in 1164. He studied theology in the University of Paris under Abélard, became Bishop of Paris in 1159, and was the first to be termed doctor of theology by the University of Paris. Several works of much value have caused him to be styled generally "The Master of Sentences." His works were treated in commentaries down to the Reformation. A collection of passages from the fathers of the Christian Church, relating to controversies in theology, entitled "Sententiarum Libri IV.," is his best known work.

LOMBARDS (lŏm'bẽrdz), a people distinguished for great valor in the early history of Europe, so named from the long spears they carried, or from their long beards. They were a branch of the Germans, occupied originally the regions of the Lower Elbe, and in the 4th century began to resist the Roman invasions. In the early part of the 6th century they came in contact with the Eastern Roman Empire by pressing southeast into the valley of the Danube. Later, in 568, their king Alboin invaded Italy, where they operated in conjunction with the Saxons and occupied the northern section, which has since been known as Lombardy. They did not only establish themselves firmly, but built churches and monasteries of much beauty, founded cities, and gradually became assimilated by the Italians. The Lombards possessed powerful kings in Autharis, Rotharis, and Luitprand, the last named securing temporary dominion over all of Italy. In 774 the last king of Lombardy, Desiderius, was overthrown at Pavia by Charlemagne, who became King of the Lombards and Franks. They embraced Christianity in the early part of the 7th century, made extensive internal improvements, and carried on a large foreign trade, Lombard street in London deriving its name from their business relations.

The *Lombard Architecture* is an outgrowth of the Lombards and the Gothic invaders of northern Italy. It dates properly from the early part of the 9th century to the 13th century, and was derived from the more inferior Roman style. Many buildings of this style of architecture still remain. Examples of it occur in Italy and in the continent as far north as the Baltic in Germany, the connection between the two countries coming about during the existence of the former German Empire, or Holy Roman Empire, which included Italy. The most important of those remaining are in Italy. They embrace churches and other buildings, notably in Verona, Pavia, and Milan, the Saint Michael Church at Pavia being the most prominent representative. The architecture differs from the classic largely in that it has a preponderance of vertical lines instead of horizontal, and in that it utilizes the dome extensively. Both the grouping of piers and the arrangement of the transepts and choir are highly artistic.

LOMBARDY (lŏm'bår-dĭ), a region of northern Italy, extending originally from the Alps to the Po River, so named from the Lombards. The region belonged to the Romans prior to the Lombard invasion. In 774 it fell to Charlemagne, then passed consecutively to Germany and Spain, and in 1815 became a part of Austria, but since 1859 it has belonged to Italy. A department of Italy is now known as Lombardy, but it does not include all of the region formerly known by that name. It includes the seven provinces of Brescia, Como, Bergamo, Pavia, Milan, Cremona, and Sondrio. The area is 9,085 square miles. Formerly the province of Mantua was included also, but it is now a part of Venetia.

LOMBOK (lŏm-bŏk'), an island in the Indian archipelago, belonging to the Netherlands. The area is 2,108 square miles. It is situated a short distance east of Java, between the islands of Bali and Sumbawa. The island is of volcanic origin and has several mountain ranges, but is well watered and fertile. Among the products are cereals, fruits, live stock, tobacco, and coffee. Most of the inhabitants are Mohammedans. Mataram is the capital. Population, 1922, 644,208.

LOMBROSO (lôm-brō'zô), **Cesare,** criminologist, born in Venice, Italy, in November, 1836. He showed an aptitude for study from early youth, especially in the line of literature and linguistics, and later took up the study of medicine. In 1859 he entered the army and was made army surgeon, three years later became teacher in the diseases of the mind at the University of Pavia, and subsequently served as director for the insane at an institute in Pesaro. He was professor of medical law and of psychiatry at the University of Turin a number of years, where he induced much interest by lecturing and writing on criminology. According to his views, crime may be regarded a disease, and is derived through inheritance or climatic environment, though his teaching has not established the criminal type. His writings are very numerous, including "Epileptic Insanity," "Anthropometry of Four Hundred Criminals," "The Man of Genius," "Psychiatrico-Legal Investigations by Experimental Methods," and "The Criminal: An Anthropological and Medico-Legal Study." He died Oct. 19, 1909.

LONDON (lŭn'dŭn), the capital of the British Empire, in the southeastern part of England, on the Thames River, about sixty miles from the sea. It is the most populous city in the world. It is located on both sides of the Thames River, which is spanned by many fine bridges. The river at this place is from 600 to 900 feet wide and flows slowly, and vast improvements by deepening and canalizing have tended to make it the center of an extensive system of navigation. Numerous railways extend from it to all parts of the United Kingdom, and it has additional transportation facilities by a vast network of electric railway lines.

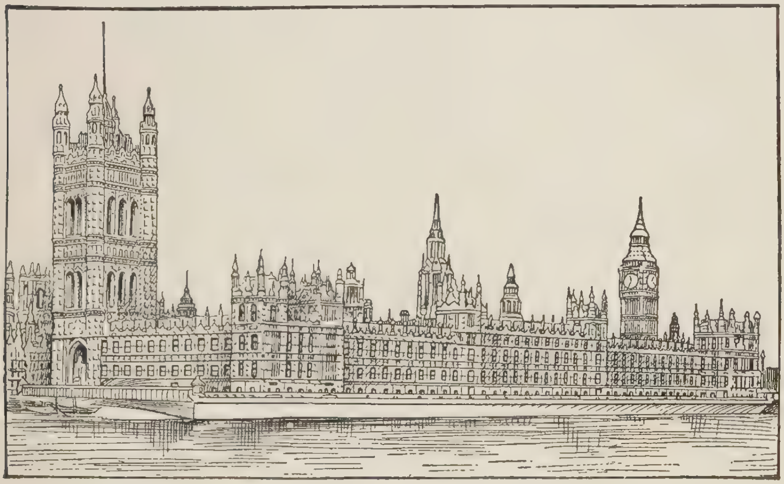
Description. London is built on a low and level tract of land, hence there is no point of vantage from which the whole city may be viewed even on the clearest day. The Fire Monument, situated near the center of the city, affords the best view, but it is not sufficiently elevated to permit seeing beyond the outskirts of the closely constructed buildings. Many of the streets are narrow and crooked, hence pure air and sunshine are wanting in many of the more densely populated districts. Fog and mist characterize the atmosphere, due to the close proximity to the sea, and the bright sky of Paris and Berlin is wanting. This circumstance, taken in connection with the exclusive use of bituminous coal for domestic and manufacturing purposes, causes the aspect to be dark and gloomy the greater part of the day. London has a mean annual temperature of 50°, ranging from 40° in the winter to 62° in the summer, and the annual rainfall is about 25 inches.

The Thames River passes from east to west through the city. South of it are the counties of Kent and Surrey, which contain the portion that is of lesser importance. The county of Middlesex is north of the river. All of the larger commercial institutions are in the East End, which contains the customhouse, the docks, the general post office, the Bank of England, the Saint Paul's Cathedral, and other noted structures. However, the East End also contains the poorest quarters, in which myriads live in want and disease. Here and in some of the narrow streets in the Lambeth and Bermondsey districts, south of the Thames, are the abodes of many of the poorer classes. The West End contains the homes of many wealthy and fashionable people, especially in the neighborhood of Hyde Park and Kensington Gardens. In this section are many fine residences of the aristocracy, located a short distance from the government offices, the British Museum, the royal palaces, and the houses of Parliament. Formerly the palaces of the nobility were located within an area of 673 acres, but they were driven farther west through the extension of trade, and the limits of London proper embrace chiefly warehouses, banks, and office buildings. During the night it is almost deserted, while in daytime more than a million persons work within the confines of what is generally known as the Old City.

Streets and Parks. The streets in the business districts are inadequate, since they are congested by the heavy traffic during the day. Many of the thoroughfares have been widened, but no general system of improvement in this line has been carried out. Along the Thames extends the Victoria Embankment, which is one of the most noted thoroughfares of the city. It affords communication along the north shore of the river eastward from the houses of Parliament, and is adorned by many fine statues and shrubbery. The most fashionable shops are on Regent Street, and numerous substantial structures of comparatively recent date have been erected on Oxford Street and its continuations. Fleet Street is devoted largely to the newspaper trade, Paternoster Row is headquarters for the book business, and the Haymarket has many fine hotels and theaters. Club life is well represented on Pall Mall, the jewelry trade is centered on Bond Street, and the police court is on Bow Street. Piccadilly has many fine shops and clubhouses. The Strand, Cheapside, and Holborn are other noted business streets, and they are particularly noted for being uncomfortably crowded during the day.

The parks and squares of London, though very numerous, are inadequate to the requirement of so large a population. Trafalgar Square, one of the finest in the city, is surrounded by many fine buildings, including art galleries, hotels, and churches. Lincoln's Inn Fields, surrounded by offices of the law fraternity, is the largest open ground in the city. Hyde Park, containing 400 acres, is located between Mayfair and Kensington Gardens, and is surrounded by a noted carriage drive. Green Park and Saint James's Park, near Trafalgar Square, are among the royal parks that have been opened to the public. Greenwich Observatory, in the southern part of the city, is surrounded by the beautiful Greenwich Park. Black Heath and Hampstead Heath are among the many heaths, or commons, preserved for the use of the people in their natural condition. Many of the public places are adorned by monuments. These include Cleopatra's Needle, on the Thames embankment; the Nelson Column, in Trafalgar Square; the monument to commemorate the great fire of London, on Fish Street Hill; the national memorial to Victoria, in front of Buckingham Palace; the colossal statue of Achilles, at Hyde Park; and the Albert memorial, at Kensington Gardens.

BUILDINGS. London has many magnificent buildings, the most important of which include those erected by the government. The houses of Parliament, located on the banks of the Thames, are among the largest Gothic structures in the world. They cover eight acres, have a river front of 940 feet, and were erected at a cost of about $15,000,000. Saint Paul's Cathedral, whose dome may be seen from most parts of the city, is a fine monumental structure. The Tower, formerly the scene of crimes and suffering, but now an arsenal and armory, is situated near the banks of the Thames. The Lord Mayor of London has his official residence in the Mansion House in the Poultry, a structure in the Corinthian style. Buckingham Palace, Saint James's, and Marlborough House are buildings of much historical interest. The British Museum contains a valuable national collection, which embraces specimens that represent all the arts and sciences and cover all the centuries included in the history of man.


PARLIAMENT BUILDING AT LONDON.

Facing Piccadilly is the Royal Academy of Art, noted for its annual exhibition of sculptures and paintings. A great variety of art products are located in the Victoria and Albert Museum. The churches include White Field's Chapel, Saint Paul's Cathedral, Westminster Abbey, Saint George's Church, Saint Giles's, Saint Bartholomew the Great, and Saint Mary le Bone. Besides the fine system of public schools, London has many noted institutions of higher learning. These embrace the University of London, Westminster School, Charter House School, Saint Paul's College, College of Physicians, and The Inns of Court. The more prominent theaters include the Covent Garden Theater, the Haymarket, the Drury Lane Theater, the Adelphi, the Strand, the Criterion, and Daly's Theater.

INDUSTRIES. London has a large domestic and foreign commerce. It is connected by steamship lines with Bremen, Hamburg, Antwerp, and other cities of Europe and the continents of both hemispheres. Being the largest consumer of food supplies in the world, it has a small export trade compared with the imports. Much of the foreign trade is with the East and West Indies and the colonies of Great Britain. The chief imports include tea, coffee, rice, sugar, tobacco, raw cotton, spices, petroleum, and fruits. London is the leading manufacturing city of Great Britain and the products make up an almost endless list. Though manufacturing enterprises are located in different parts of the city, they are more largely represented in a section extending in a semicircle to the south and east. Among the principle products are clothing, furniture, machinery, glass, pottery, jewelry, clocks and watches, chemicals, saddlery, musical and surgical instruments, and spirituous liquors.

COMMUNICATION. London has one of the most efficient underground railways in the world, furnishing connections between the different parts of the city and the great railway terminal stations. About a million persons enter the city every morning, hence the enterprise of furnishing communication is very important. The London Bridge, which furnishes the chief communication over the Thames, is crossed by about 350,000 persons every day. Many stations of the underground railways are located within the city, such as Victoria, Waterloo, and London Bridge, and at many underground points are numerous shops. Four tunnels pass under the Thames, hence communication is continuous between the north and south sides of the river, which is also crossed by many bridges and lines of ferries. Extensive tramways and electric street railways are in operation, but considerable communication is still furnished by horse cars. Carriages, cabs, and omnibuses supply a larger per cent, of the communication than is the case in American cities. It is customary in London to summon a cab by blowing a whistle at the doorstep.

GOVERNMENT. The government of London has been evolved from an experience extending over a long period of time, but the form now in force dates from 1900, when the administration was greatly simplified by consolidating various districts. At present the British government exercises the central control, and the duties and powers of the local authorities are defined and limited by acts of Parliament. Control is exercised over various local authorities by certain departments of the general government, similar in at least some respects to the influence of the national government of the United States over various regulations in the District of Columbia. For instance, the public utilities, such as electric lighting, are under the supervision of the Board of Trade. The board of control has certain jurisdiction over the parks and commons, while the board of education may withhold the government grant from a district where the school system is not maintained with a certain degree of proficiency. A special act of Parliament is required before local bodies can negotiate a municipal loan. From this it will be seen that the city must be understood from various standpoints in order to appreciate the effort put forth by so vast a number of people to live together in the metropolis of the British Empire.

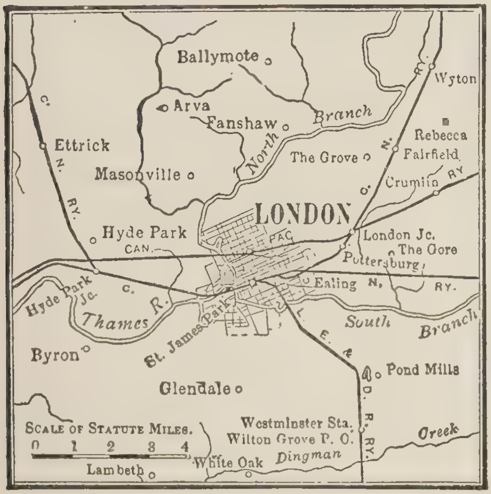
At least four Londons may be enumerated: One known as the ancient city of London, another under the county council, a third including boroughs for parliamentary representation, and a fourth embracing a number of suburbs. The first mentioned has come down from the Middle Ages, and has its own police regulations, a common council, and the chief executive, who is known as the Lord Mayor. All the affairs of the ancient city are controlled by the city government, except the main drainage system. The London under the county council is outside of the ancient city, but it does not include the urban district which has been annexed to form Greater London. The city is divided into thirty parliamentary boroughs, from which 58 members are returned to Parliament. A mayor, aldermen, and a common council comprise the chief officials of each administrative district, and these are responsible only to the central government, except that some minor matters are directed by the common council of London. The police force of the entire city is under the government of Great Britain, consisting of about 16,500 men, and the central offices are at New Scotland Yard, located near Westminster Bridge. For postal purposes Greater London is divided into a number of districts, and the delivery of mail is free.

INHABITANTS. The city contains a large mixture of different races of people. More than half of the inhabitants were born in London. The most numerous of those not English are included in the following: Irish, 300,000; Scotch, 185,000; Germans, 165,000; French, 60,000; and Jews, 50,000. In 1921 the county and city of London had a population of 4,622,961. In the same year Greater London had a population of 7,352,963.

HISTORY. The history of London begins about the year 43 A. D., when the Romans were in possession of the southern part of Britain and founded a military station on the present site of London. An insurrection of the British led by Boadicea caused it to be burned in 61 A. D. It was the center of various disturbances until about 306, when Constantine constructed walls and fortifications, and thereby established stability and laid a firm basis for commercial prosperity. From 369 until 412 it was the capital of Britain, when it was known as Augusta. Subsequently it became the chief seat of the Saxons. King Alfred expelled the Danes and fortified the city. It became famous as a commercial center at the beginning of the reign of Edward III. In 1664-66 the plague raged, when about 69,000 persons succumbed to the dreaded disease, and in the latter year a destructive fire spread over 340 acres, burning about 15,000 houses. From these calamities the city recovered with marked rapidity. The Bank of England was established in 1694, Sir Hans Sloane founded the British Museum in 1759, the old walls were torn down in 1760, and about that time the streets were improved by pavements, lighting, and efficient sanitary regulations. In 1840 the present parliamentary buildings were commenced, and in rapid succession followed the construction of great aqueducts, parks, street railway lines, and many other modern municipal improvements.

LONDON, a city of Ontario, county seat of Middlesex County, on the Thames River, 121 miles southwest of Toronto. It is on the Canadian Pacific, the Erie and Detroit, and the Canadian National railways. The chief buildings include the county courthouse, the public library, the Western University, two cathedrals, and the exposition building. It has gas and electric lighting, systems of sewerage and waterworks, and electric street railways. The manufactures include boots and shoes, leather, flour, ironware, chemicals, machinery, cigars, woolen goods, suspenders, and utensils. The surrounding country is agricultural and stock producing. London was platted as a town in 1826. Population, 1901, 37,976; in 1921, 60,959. See illustration on following page.

LONDON, Jack, author, born in San Francisco, Cal., Jan. 12, 1876. He studied at the University of California, but left that institution before graduating, and spent some time in the Klondike. Later he was employed as a sailor on the Pacific, engaged in hunting seals, and spent some time in traveling in Canada and the United States. In 1894 he began to write tales of adventure and to correspond to magazines and other periodicals. His books include "A Daughter of the Snows," "The Son of the Wolf," "The War of the Classes," "The People of the Abyss," "The Game," "Before Adam," "Tales of the Fish Patrol," and "The Cruise of the Dazzler." He died Nov. 27, 1916.



LONDON, University of, an institution of higher learning at London, England, founded in 1827. It was originally known as University College, but in 1836 two charters were granted, one establishing University College and the other London University, the latter having power to grant degrees, but the former serving as a preparatory institution for the university proper. In 1878 these institutions were made coeducational. Admission may be secured at the age of sixteen years. Extensive courses are maintained. In connection with the institution is a fine library. In 1922, it had an attendance of 5,060 students, besides many evening students.

LONDONDERRY (lŭn′dŭn-dĕr-rĭ), or **Derry,** a city and seaport of Ireland, capital of a county of the same name, on the Foyle, three miles from Lough Foyle. It is connected with Waterside, an extensive suburb across the Foyle, by an iron and steel bridge. The chief buildings include the county courthouse, the Anglican and Catholic cathedrals, the public library, the Gwyn's School, and Magee College. It has railway communication, modern municipal facilities, and manufactures of spirituous liquors, shirts, ironware, lumber products, and ships. It is the residence of a bishop. The monastery of Saint Columba was founded on its site in 546, around which the city developed. In the early period of the Reformation in Britain it became a stronghold of Protestantism and in 1689 was besieged by James II. Population, 1922, 41,082.

LONG, John Davis, lawyer and statesman, born in Buckfield, Me., Oct. 27, 1838; died Aug. 27, 1915. After serving in the legislature of Massachusetts, he became Lieutenant Governor, and in 1880-82 was Governor of that State. President McKinley appointed him Secretary of the Navy in 1897. Besides writing a volume of poems, he made a translation of the "Aeneid."

LONG BEACH, a city of Los Angeles County, Cal., 20 miles south of Los Angeles, on San Pedro Bay and on the Southern Pacific, the Union Pacific, and other railroads. It has electric lights and railways, paving, ship building, salt works, gas plant, and a brisk local trade. The features include the city hall, high school, Y. M. C. A., public library, Virginia Hotel, and bath and club houses. It is famous as a summer and winter resort, a center of social and educational activity, and has one of the finest beaches on the Pacific. It was incorporated in 1907. Population, 1920, 55,593.

LONG BRANCH, a town of Monmouth County, New Jersey, at the mouth of the South Shrewsbury River, 28 miles south of New York City. It is on the Central of New Jersey, the New Jersey Southern, and the Pennsylvania railroads. The town stretches about five miles along the beach. It has manufactures of shirts, flour, lumber products, asphalt, and machinery. Long Branch was settled in 1670 and has been popular as a summer resort since 1790. The summer population often exceeds 50,000, but the permanent population, according to the census of 1920, 13,521.

LONGEVITY (lŏn-jĕv′ĭ-tȳ), the term employed to designate the duration of life of a people or an individual. Careful investigation has proved that women have an average duration of life somewhat longer than that of men, while a people combining intellect with virtue possesses the greatest longevity. In studying the tendency to live long three elements are taken into account: longevity, fecundity, and vigor. Human life does not generally reach seventy years, while ninety is very rare, but there are instances in which persons of regular habits and extraordinary physical strength endured more than one hundred years. The elephant and the whale live to exceed a hundred years. Some writers assert that the swan, goose, and heron sometimes exceed a hundred years, but the instances are rare, and some fish are said to live 150 years.

The greatest duration of human life mentioned in writings coming to us from ancient times is that spoken of in the Bible, especially in the time before the deluge. Methuselah's age was 969 years, being the greatest on record, but some have subjected the accuracy of the record to adverse criticism. It is recorded that Abraham was 175; Isaac, 180; Jacob, 147; and Joseph, 110 years at the time of death. The average age of man was reported at 35.2 years by the census of the United States in 1900.

LONGFELLOW (lŏng'fĕl-lō), **Henry Wadsworth,** eminent poet, born in Portland, Me., Feb. 27, 1807; died March 24, 1882. He was the son of Stephen Longfellow, a noted lawyer of Portland. When fourteen years of age he entered Bowdoin College, where he graduated in 1825. Soon after he undertook the study of law in his father's office. However, he was offered a professorship of modern language in Bowdoin College. With the object of fitting himself more particularly for that line of work, he went abroad to study modern languages, for which purpose he visited several European countries, remaining there about three years. On returning to America he gave his lectures on "Modern Literature and Language" at the college, and wrote numerous contributions for the *North American Review* and other periodicals. He remained at Bowdoin College five years, and within that time published his first volume, entitled "Essay on the Moral and Devotional Poetry of Spain," which was accompanied by translations from Spanish verse.

HENRY W. LONGFELLOW.

The first of his prose writings appeared soon after as "Outre-Mer." It is a description of his European life and travels. In 1835 he was invited to the professorship of modern languages and literature at Harvard University, and again went to Europe for special study, giving particular attention to Switzerland and the Scandinavian countries. About that time his young wife died, which was the occasion of his poem, "Footsteps of Angels." He held his professorship at Harvard eighteen years, resigned in 1854, but continued to live in Cambridge until his death, occupying a house used as Washington's headquarters at the beginning of the Revolution.

The literary life of Longfellow began properly with his college days and his work as a writer continued to the time of his death. His productions show a wide range of sympathy and taste and give evidence of great versatility in the poetic art. Many of his writings show clearly that he was a careful student of many countries and ages, and that he exercised a marked purpose in giving the world the results of his valuable research. He is noted for his friendly associations, traces of which are found in several of his poems, these being personally addressed to friends, or he distinctly alludes to them, thus furnishing the reader the pleasant companionship so thoroughly enjoyed by the poet. In 1861 his life was saddened by the death of his second wife, whose dress caught fire as she sat among her children, two sons and three daughters, and she was burned to death. This incident occasioned the translation of Dante's "Divine Comedy." In 1881 he wrote a poem on the death of President Garfield. His last poetic production, published in the year of his death, is entitled "Bells of San Blas."

No American poet is admired and praised more than Longfellow and none is more worthy of admiration. Degrees were granted him by Cambridge and Oxford. The public schools of the United States commemorate his birthday as a favorite memorial. His writings, besides those named above, include "Hyperion," "Voices of the Night," "Poets and Poetry of Europe," "Poems on Slavery," "The Building of the Ship," "Evangeline," "Golden Legend," "The Song of Hiawatha," "The Courtship of Miles Standish," "Tales of a Wayside Inn," "Aftermath and Christus," "Poems of Place," "The New England Tragedy," "Belfry of Bruges and Other Poems," "The Hanging of the Crane," and "Masque of Pandora."

LONG ISLAND, an island of the United States, situated between Long Island Sound and the Atlantic Ocean, forming a part of the State of New York. The length from east to west is 117 miles, the width is from ten to 24 miles, and the area is 1,682 square miles. It is separated from New York City by the East River. Near it are several small islands. It has an undulating surface and contains a number of small lakes. Formerly the island was covered by a heavy growth of timber and still has small tracts of primitive forest, consisting largely of oak, chestnut, hickory, and pine. Much of the soil is productive, especially in the northern part, but in the southern portion are a number of sandy plains and a series of lagoons. The fisheries yield oysters and many species of fish. The coast has several large bays, supplying many convenient harbors, and railroad lines traverse its entire length. Coney Island is noted as a summer resort and Brooklyn is the principal city, but it was annexed to Greater New York in 1898. Long Island is subdivided into the four counties of Kings, Queens, Suffolk, and Nassau, Kings being entirely and Queens being partly in New York City. The Dutch founded the first settlement at the western end of the island in 1622. It was in the hands of the British during the greater part of the Revolution.

LONG ISLAND, Battle of, an engagement of the American Revolution, fought at Brooklyn Heights on Aug. 27, 1776. Washington occupied a strong position on Brooklyn Heights with 8,500 men and was attacked by 15,000 British under General Howe. The American outposts were commanded by Generals Sterling and Sullivan, who were routed and captured, the British losing 400 and the Americans about 1,400 in killed and captured. During the night Washington conveyed his army over to New York, thus saving it from being captured.

LONG ISLAND SOUND, an extension of the Atlantic Ocean between Connecticut and Long Island. Its width is from three to twenty miles. The greatest depth is about 200 feet and it is navigable for the largest vessels. Several lighthouses are on or near its shore. The strait called East River connects it with New York Bay. It receives the water flowing from the Connecticut, Housatonic, Thames, and other rivers. The sound has valuable fisheries and is important as a sailing route to and from New York City.

LONGITUDE (lŏn'jĭ-tūd), the distance measured in degrees on the earth's surface due east and west from a given meridian. Latitude and longitude enable us to locate the exact position of a place upon a globe or map. Longitude is measured along the Equator or a parallel of latitude, and is generally reckoned from the meridians of Washington, Greenwich, Berlin, or Paris, the larger number of school texts used in America giving longitude east or west of Washington or of both Washington and Greenwich. It is expressed in degrees, minutes, and seconds, or in time, 15° being equal to one hour. At the conventional point the longitude is 0°, and degrees of longitude are reckoned east and west from it to 180°, or to twelve hours in time. The reason that degrees, minutes, and seconds of longitude are reduced to equivalent denominations of time by dividing by fifteen is that the earth turns through 360° of longitude from west to east in 24 hours, or 15° in one hour. At the Equator degrees of longitude are longest, being generally stated at 69½ statute miles, but more properly at 69.16 miles, while at the poles they are designated 0°. The cause of degrees of longitude being shorter as we approach the poles is due to the fact that the earth is a sphere. See **Latitude.**

LONGLEY, James Wilberforce, statesman, born at Paradise, Nova Scotia, Jan. 4, 1949; died at Halifax, March 16, 1922. He studied at Osgoode Hall, Toronto, and was admitted to the bar in 1875. At an early age he began to contribute to newspapers and served as managing editor of the Halifax *Morning Chronicle* from 1887 to 1891. He held a number of important positions in the government and was attorney-general of Nova Scotia from 1886 until 1905. Besides lecturing and writing for magazines, he published "Life of Joseph Howe," "Canada and Imperial Federation," and "Socialism, Its Truths and Errors."

LONG PARLIAMENT, a term used to designate the fifth Parliament summoned by Charles I. of England. It met Nov. 3, 1640, was twice expelled and twice restored, and dissolved of its own accord March 16, 1660. The name *Rump Parliament* is given to the members who remained, about sixty, after the others had been expelled by the army after the treaty of Newport was concluded, in 1648. It was the Rump Parliament that executed Charles I. See **Cromwell.**

LONGSTREET (lŏng'strēt), **James,** soldier, born in Edgefield, S. C., Jan. 8, 1821; died Jan. 2, 1904. In 1842 he graduated at West Point and was assigned to the infantry. He took part in the frontier wars until 1846, when he entered service for the Mexican War, and, after being wounded at Chapultepec, he filled the office of paymaster in the United States army, attaining to the rank of major. At the beginning of the Civil War he resigned to enter the Confederate service under Beauregard, serving at the Battle of Bull Run, and in 1862 became major general. He accompanied General Lee in the campaigns against McClellan, Pope, Burnside, and Meade, and after the Battle of Fredericksburg was promoted to the rank of lieutenant general. Subsequently he rendered efficient service in the Battle of Gettysburg, commanded in the campaign of the Wilderness, in which he was severely wounded, but recovered sufficiently to aid in defending Petersburg, and in April, 1865, surrendered with General Lee. General Longstreet became an active worker for harmony between the North and South soon after the war closed. After the amnesty he was appointed by President Grant as surveyor of the port of New Orleans, and later served as commissioner of engineers for Louisiana a term of four years. In 1880 he became minister to Turkey.

JAMES LONGSTREET.

LONGWORTH, Nicholas, public man, born at Cincinnati, Ohio, Nov. 5, 1869. He graduated at Harvard University in 1891, studied jurisprudence at Harvard Law School, and began a successful practice in his native city. In 1899 he was elected to the State Legislature, serving until 1901, when he became a member of the State senate of Ohio. He was elected to Congress as a Republican in 1902 and was reëlected continuously, except in 1912, when he was defeated by the Progressive party. In 1925 he was elected speaker of the House, succeeding Frederick H. Gilbert of Massachusetts. Early in 1906 he married Alice Roosevelt (b. 1884), daughter of Theodore Roosevelt.

LOO-CHOO, Liu Kiu, or **Riu Kiu,** a chain of islands in the Pacific Ocean, between Formosa and Japan. The chain includes 55 islands and islets, 36 being inhabited, and the area is 934 square miles. It is of volcanic origin, but has a fertile soil and is populated principally with descendants of the Japanese. However, the prevailing customs are mainly of Chinese origin. Among the products are minerals, wheat, rice, sugar cane, maize, sago, sweet potatoes, tobacco, indigo, fish, domestic animals, and many varieties of fruits. Great Loo-Choo and Oshima are the two largest of the group, the former having an area of 500 and the latter of 290 square miles. The islands have belonged to Japan since 1774. They contain several market towns, among them Napa and Shuri, the latter being the capital. Population, 1918, 458,628.

LOOM, a machine in which yarn or thread is woven into fabric by the intercrossing of threads called *warp,* or *chain,* running lengthwise, with others called *woof, weft,* or *filling.* Looms were used for weaving fabrics by peoples in remote antiquity, Pliny attributing the invention of cotton weaving to Semiramis. The looms of Babylon maintained their celebrity long after the fall of the Assyrian Empire. The first machine-power loom was invented by Cartwright of England in 1787, since which time many valuable improvements have been made, but hand looms are still used for some purposes and in countries where manufacturing has not been modernized.

The principal parts of a loom are its frame, in which the row of yarn that forms the warp is held, and the harness or leshes, which govern the interlacing of the threads to form a shed for the woof. In 1876 an important improvement was made in the manufacture of looms by the Hunt Loom and Fabric Company of San Francisco. This consists of an attachment by which the loom becomes self-feeding and overcomes the waste of weft. In this machine there is no intermission in the operation of weaving, except to make repairs, and, if a break of the warp thread occurs, the loom is stopped automatically and a signal bell rings. This invention has made it possible for a large number of looms to be operated by a single attendant. Looms of different construction are used in the manufacture of all classes of fabrics, such as silk, woolen, cotton, and linen goods. They are employed in the manufacture of different classes of cloths, matting, and carpeting.

LOOMIS (lo͞o'mĭs), **Charles Battell,** author, born in Brooklyn, N. Y., Sept. 16, 1861; died Sept. 23, 1911. He studied at the Brooklyn Polytechnic Institute, but did not graduate, and was employed as a clerk until 1891. In the meantime he contributed humorous sketches to periodical literature. His writings are particularly noteworthy in that they caricature the social types of America in an interesting manner. Among his books are "A Partnership in Magic," "The Four-Masted Cat-boat," "I've Been Thinking," "Minerva's Maneuvers," and "Bath in an English Tub."

LOOMIS, Elias, physicist and author, born in Wellington, Conn., Aug. 7, 1811; died in New Haven, Aug. 16, 1889. He graduated at Yale in 1830, studied in Paris, and served as professor of natural philosophy in the Western Reserve College, Ohio, from 1837 until 1844, when he secured a like position in the University of the City of New York, where he labored successfully until 1860. Subsequently he became professor of philosophy and astronomy at Yale. On Jan. 23, 1849, he announced his discoveries in regard to the velocity of electricity on telegraph wires. His published works include "Progress of Astronomy," "Treatise on Meteorology," "Natural Philosophy," and "Analytical Geometry and Calculus."

LOPE DE VEGA. See **Vega.**

LOPEZ (lō'pās), **Narciso,** Cuban soldier, born in Caracas, Venezuela, in 1799; suffered death by strangulation in Havana, Cuba, Sept. 1, 1851. He descended from Spanish parents, sided with the revolutionists in Venezuela, but later went over to the Spanish army and secured a promotion to the rank of colonel. After Venezuela became independent, he visited Spain, where he served against the Carlists, and in 1839 became major general and was appointed governor of Valencia. Later he settled in Cuba. He held several offices of trust under the governor general until 1843, when he became identified with the revolutionists, and in 1849 visited the United States for the purpose of promoting the annexation of Cuba. Subsequently he organized several attempts to liberate Cuba from the Spanish. His expedition in 1849 was intercepted by the United States. The following year he landed at Cardenas, but was forced to retire. In 1851 his expedition of 500 volunteers landed at Murillo, but, owing to a lack of support, he was defeated and captured and shortly after was executed by the garrote.

LOQUAT (lō'kwăt), a shrub native to China and Japan, but cultivated for its fruit in the warmer parts of the temperate regions. It grows to a height of about twenty feet, but yields the best returns when it is trimmed so as not to exceed twelve feet in height. The leaves are wrinkled and oblong, and the fruit is pear-shaped and about an inch in diameter. Several species are grown in the United States, chiefly in Florida and California, and the seeds are used as a flavoring to tarts.

LORAIN (lō-rān'), a city of Ohio, in Lorain County, on Lake Erie, 24 miles west of Cleveland. It is on the Pennsylvania, the New York Central, the Baltimore and Ohio, and other railroads, and has communication by steamboats and electric railways. Coal and natural gas are obtained in the vicinity. It has a public library, the Saint Joseph's Hospital, a fine high school, and many churches. The manufactures include iron and brass wares, clothing, earthenware, and machinery. It is the seat of the National Tube Company and the American Ship Building Company. The place was first settled in 1822, became a town in 1875, and was chartered as a city in 1895. Population, 1920, 37,295.

LORCA (lôr'kȧ), a city of southern Spain, in the province of Murcia, 42 miles southwest of the city of Murcia. The surrounding country is fertile and contains lead mines. Lorca consists of two portions, the old and the new towns, the former dating from the time of the Moors. Among the chief buildings are the cathedral, the public library, the castle, and several schools and convents. The manufactures include linen and woolen goods, soap, leather, machinery, and earthenware. Lorca has modern facilities, such as electric lighting and street railways. Population, 1922, 71,147.

LORELEI (lō'rā-lī), a precipitous elevation on the Rhine River, half a mile above Saint Goar, Germany. It has a height of 427 feet, is now penetrated by a railway tunnel, and was made famous by Heine's celebrated "Volkslied." This exquisite poem represents a siren seated upon the Lorelei, by whose charms and beautiful song boatmen were attracted to a whirlpool at the base of the rock and there met destruction. The scenery at the cliff is the most beautiful on the Rhine, and near it is a basin noted for its productive trout fishery.

LORENZ (lō'rĕnts), **Adolf**, surgeon, born in Austrian Silesia in 1850. After receiving instruction under private tutors, he attended the University of Vienna, where he graduated in 1880, and soon after was made assistant in surgery at that institution. Under the direction of Professor Albert, he became interested in orthopaedic surgery. His success in medical and surgical work is dependent largely upon treating deformities and diseases of children, especially the partial congenital dislocation of the hip joint. His method was demonstrated successfully before the medical congress of Berlin in 1895, since which time his so-called bloodless method of treatment has met with general acceptance. He visited the United States in 1902 and attracted general attention by demonstrating reductions in cases of hip dislocation and the straightening of clubfeet, for which purposes he invented a number of instruments. His chief writings include "The Bloodless Method of Treating Congenital Dislocation of the Hip-joint," "Orthopaedic Treatment of Hip-joint Contractions," and "Treatment of Congenital Hip-joint Dislocation by Relocating."

LORETO (lô-rā'tô), or **Loretto**, a small town of Italy, situated on a railway line, about fifteen miles south of Ancona and three miles west of the Adriatic. It is noted as the seat of the Holy House, which, according to tradition, was occupied as a dwelling by the Virgin Mary at Nazareth and, in 1295, removed to Loreto. The building was originally of simple construction, but it has been finely improved by sculptures in marble. The town is visited by many tourists annually, who go there to view the structure and witness an image of the Virgin, which is reputed to be a carving by Saint Luke. Population, 1922, 7,948.

LORETO, Sisters of, an order of Roman Catholic nuns, so named from the town of Loreto, Italy. It was founded by Charles Nerinck in 1812 and the first community was established in Kentucky, since which time it has spread rapidly, devoting its efforts to the care and education of poor orphans. The principal academy of the order is situated at Florissant, Mo. In 1918 it had 602 sisters and 65 academies and parochial schools.

LORIMER (lŏr'ĭ-mẽr), **George Horace,** journalist and author, born in Louisville, Ky., Oct. 6, 1868. He studied at the Mosely High School, Chicago, and later at Colby and Yale. Soon after he took up a business career. He became editor of the *Saturday Evening Post* in 1899. He is the author of several books that have been widely read. They include "Old Gorgon Graham" and "Letters from a Self-made Merchant to his Son."

LORIS (lō'rĭs), the name of two species of lemurs native to Asia. They differ from the true lemurs in having a round head, large eyes, and no tail. They spend the larger part of the day by sleeping in the branches of trees, but come out at night in search of food, which consists of insects, small birds, and fruits. These animals are small, about as large as the domestic cat.

LORNE (lôrn), **Sir John Douglas Southerland Campbell,** statesman, eldest son of the Duke of Argyll, born in London, England, Aug. 6, 1845. He studied at Eton, Saint Andrew's University, and Cambridge, served as a Liberal in Parliament from 1868 until 1878, and in the latter year was appointed Governor General of Canada, serving in that capacity until 1883. On returning to England, he was elected a member of Parliament and in 1900 became Duke of Argyll. He married Princess Louisa, sixth child of Queen Victoria, in 1871. He is author of "Life of Lord Palmerston," "Trip to the Tropics and Home through America," "Guido and Litta," and "Psalms Literally Rendered in Verse." He died May 2, 1914.

LORRAINE (lô-rān'), called *Lothringen* in German, a region of Europe, so named because it formed a possession of King Lothaire II. Originally it included Friesland, Alsace, and the regions lying between the Meuse, Rhine, and Scheldt, and in 954 became divided into Upper and Lower Lorraine. The latter now forms a portion of the kingdoms of Belgium and Holland, being known in Belgium as Brabant and as Brabant and Guelderland in Holland. France secured Upper Lorraine in 1766, but at the close of the war between Germany and France, in 1870-71, a large portion of it was ceded to Germany. The German portion includes the two fortified cities of Metz and Thionville and embraces part of Alsace-Lorraine (q. v.).

LOS ANGELES (lŏs ăṉ′gĕl-ĕs), a city of California, county seat of Los Angeles County, the largest city on the Pacific coast. It is finely located on a fertile plain, about 15 miles from the Pacific Ocean, and is on the Southern Pacific, the Atchison, Topeka and Santa Fé, the Union Pacific, and several electric railroads. Its harbor, formerly known as San Pedro, is a busy place. The Pacific Ocean is only fifteen miles west, and north of it are ranges of the Sierra Madre. It is noted for its healthful climate, beautiful location, and pleasant sunshine.

The streets are broad and regularly platted and many of them are substantially paved with asphalt, stone, and brick. Fine gardens, vineyards, and orange groves surround the city. It it beautified with fine shrubs, flowers, and avenues of eucalyptus, palmetto palms, and other trees. Near the city are a number of celebrated health and seaside resorts, hence it is visited by many tourists at practically all times of the year. An extensive system of street railways provide urban, suburban, and interurban communication. Griffith Park, located in the foothills near the city, is a beautiful public place. Elysian Park contains the famous Fremont's Gate, erected in honor of General Frémont, and is celebrated for its great variety of flowers and shrubs. The parks as a whole contain about 4,850 acres, including East Lake and West Lake parks, which without a doubt are equal to the finest public grounds in the United States.

The architecture is modern and substantial. The buildings include the Polytechnic High School, the city hall, and the federal building. Among the notable structures erected through private enterprises are the Y. M. C. A., the Chamber of Commerce, and a number of fine hotels, including the Ambassador and the Biltmore. It has a branch of the University of California, the University of Southern California, the Saint Vincent's College, and the Occidental College. Among the notable churches are the Roman Catholic Cathedral, the First Congregational, the Saint Paul's Cathedral (Episcopal), the First Methodist Episcopal, and the Old Plaza Church, once the headquarters of General Frémont. The public library has about 576,673 volumes. The city has several hospitals, a number of fine public schools, and beautiful cemeteries.

Los Angeles is surrounded by a fruit-growing country and is in the center of a region that contains valuable deposits of lead, gold, silver, coal, and petroleum. Among the manufactures are flour, canned fruit, fertilizers, confectionery, earthenware, and machinery. It has extensive interests in the refining of petroleum. Large quantities of fruit, petroleum, and merchandise are shipped and it has a growing jobbing trade with the cities of southern California and Arizona. The public utilities include waterworks, gas and electric lighting, sewerage, and telephone service.

The Spaniards first visited the region in 1769. In 1781 the place was settled and named *Puebla de Nuestra Senora la Reina de Los Angeles,* meaning "City of Our Lady, the Queen of the Angels." The Mexicans made it the capital of the Province of California, though the seat of government was alternately at this place and at Monterey. Commodore Stockton with a force of the United States navy captured it in 1846 and it was chartered as a city in 1851. Its prosperity began with the completion of railway lines to various points on the Pacific coast, and its growth was stimulated through the discovery of petroleum and the development of gardens and orchards in its vicinity. San Pedro was annexed in 1911. Population, 1920, 576,673.

LOSSING (lŏs′sĭng), **Benson John,** historian, born in Beekman, N. Y., Feb. 12, 1813; died June 5, 1891. After securing an education, he became a watchmaker at Poughkeepsie in 1826, and in 1835 left that occupation to become proprietor of the Poughkeepsie *Telegraph.* In 1838 he engaged as wood engraver in New York City, edited the *Family Magazine* in 1838-40, the *Young People's Mirror* in 1848-49, and the Philadelphia *American Historical Record* in 1872-75. He collected a large number of valuable histories and biographies, contributed to *Harper's Magazine,* and made a collection of documents relating to American history. His writings include the "Cyclopaedia of United States History," "History of the United States," "Civil War in America," "American Centenary," "History of the City of New York," "Vassar College and its Founder," and "Life of Washington."

LOT, the son of Haran and nephew of Abraham. He accompanied Abraham to Canaan, but later the two separated because of quarrels among their shepherds, and Lot settled in Sodom, the vicinity being well watered by the Jordan and suitable for his herd. When the city of Sodom was to be destroyed, he and his household were warned in time, but on the journey his wife was turned to a pillar of salt on account of looking back, but he and his two daughters escaped safely. From Lot descended the Ammonites and Moabites. The Dead Sea is called Bahr Lut in Syriac, meaning the Sea of Lot.

LOTI (lō-tē). See **Viaud, Louis Marie Julien.**

LOTTERY (lŏt′tĕr-ȳ), an institution for the distribution of prizes by lot or chance. The general plan is to prepare a number of tickets, which are sold at a specified price, the larger majority of which are blank, thus making the income much larger than the amount expended. Lotteries were of common occurrence among the Romans. They are now sanctioned for the support of charities and religion, but as a general institution are prohibited in most nations.

The lotteries of many European countries took on the worst form of gambling and dishonesty in the middle of the 16th century, on account of which prohibitive measures were adopted and the institutions were suppressed. In America the first lottery was sanctioned by the Virginia Company in 1612, and in 1776 the American Congress passed an act legalizing lotteries for schools, roads, and other public improvements. Subsequently many frauds were perpetrated, which finally induced many legislative bodies to enact limiting and prohibitive legislation. The most extensive lottery ever maintained in America was the Louisiana State Lottery at New Orleans, which was finally suppressed by the State constitution in 1895, and an act of Congress prohibited the use of the mails in the management of its business. It is singular that there is a tendency in man which prompts individuals to invest their hard-earned money in lottery tickets, thereby taking chances along with others in winning prizes, knowing such an institution is absolutely certain to take more from the investors than is returned.

LOTUS (lō′tŭs), a name derived from the *lotus* of Greek legend and applied to a large number of widely different plants. It is now used to designate several species of the water-lily family, particularly the so-called *sacred lily* that grows in the valley of the Nile. The same and allied species are found in other parts of Northern Africa and in the countries of Europe and Asia which border on the Mediterranean. The roots are eaten by people who reside in the vicinity of Lake Menzaleh. The name is applied in America to a water lily, commonly called *chinquapin,* and in Arabia to several species of thorny shrubs that grow in the desert. The lotus of Egyptian mythology is, perhaps, the same class of fruit referred to by Homer in the account where companions of Ulysses were persuaded to eat the lotus with the design that the participants would, as a result, desire to remain forever in the country where the lotus thrives, but the exact kind of fruit implied by the term is not known. The so-called *common lotus* is a favorite flowering plant grown extensively in gardens and houses. It has white flowers and large leaves. Lotus plants of the clover family are called bird's-foot trefoil. They are creeping vines with perennial roots.

COMMON LOTUS OF EGYPT.

LOTZE (lôt′sẹ), **Rudolf Hermann,** philosopher and author, born in Bautzen, Germany, May 21, 1817; died in Berlin, July 1, 1881. He took a complete course of instruction at Leipzig, became professor of philosophy at the University of Leipzig in 1842, and in 1844 secured a like position in the University of Göttingen, where he spent nearly forty years of his life. In 1881 he was called to Berlin, but died soon after. He was not only a forceful teacher, but a public lecturer and writer, though his system of philosophy was not announced until after long years of studious application. His philosophic system may be regarded as idealism associated with teleology. According to it every material change in the universe, as well as the cause of all being, is explained by linking everything with the idea of the good. His first contribution to scientific literature was his "Handbook of Philosophy," published while at Leipzig. His later works include "Universal Pathology," "System of Philosophy," "Logical Psychology," "On the Idea of Beauty," "Microcosmus," and "General Physiology of Life."

LOUBET (lōō-bā′), **Émile,** President of France, born Dec. 31, 1838. His father was a prosperous peasant proprietor and desired an education for his children. Accordingly, he sent Émile to the school in his native town and afterward to study law at Bergum and Paris. Soon after completing his course, the young man became an advocate in Paris, where he established a successful law practice. In 1876 he secured an election to the Chamber of Deputies as a republican and was reëlected in 1877 and 1881. In 1885 he was chosen to the Senate. Two years later he entered the portfolio of public works in the first ministry under President Carnot, later he held the portfolio of the interior, and in 1896 and 1899 was president of the Senate. President Faure died on Feb. 16, 1899, and two days later Loubet was elected President of the republic in the National Assembly by a vote of 483 out of a total of 812. The administration of Loubet demonstrates that he possessed firmness, integrity, and patriotism, and that his aim was to further the interests of France as a united and prosperous nation. In 1906 he was succeeded by President Fallieres.

LOUIS (lōō'ĭs), the name of eighteen kings of France, the most important of whom are treated in special articles and the others reigned as follows: Ludwig I. (q. v.), surnamed le Débonnaire, born in 778, succeeded his father, Charlemagne, in 814, died June 20, 840; Louis II., born Nov. 1, 846, became king Dec. 8, 877, died April 10, 879; Louis III., born in 863, became king in 879, died in 882; Louis IV., born in 921, became king in 936, died in 954; Louis V., born in 966, succeeded Lothaire in 986, and died in May, 987; Louis VI., born in 1078, succeeded to the throne in 1108, and died Aug. 1, 1137; Louis VIII., born Sept. 5, 1187, became king in 1223, died Nov. 8, 1226; Louis X., born in 1289, became king in 1314, died in 1316; Louis XII., born in 1462, became king in 1498, died Jan. 1, 1515.

LOUIS VII., King of France, son of Louis VI., born in 1120; died Sept. 18, 1180. He succeeded his father as King of France in 1137 and shortly after made an unsuccessful attempt to establish his rights as Duke of Aquitania. This caused him to become complicated in several battles, in one of which he offended the Pope by destroying the beautiful cathedral at Vitry. As a result he was thrown into a quarrel, by which he was obliged to enter upon a crusade to the Holy Land, in 1147, but returned to France after two years, having lost a large part of his force. Henry II. of England married his divorced wife Eleanor, acquiring thereby Poitou and Guienne. His son, Philip Augustus, succeeded him as King of France.

LOUIS IX., King of France, commonly called Saint Louis, eldest son of Louis VIII., born April 25, 1215; died near Tunis, Africa, Aug. 25, 1270. He succeeded his father in 1226 and when dangerously ill, in 1244, made a solemn vow to become a crusader to the Holy Land in case of recovery. Leaving his mother as regent, he landed in Cyprus with an army of 75,000 men and thence sailed, in 1249, to Egypt for the purpose of conquering that region with the design of later making himself master of Palestine. However, the Mohammedans defeated him, made him a prisoner, and liberated him only after a heavy ransom. In 1254 he returned to France, inaugurated a policy of internal improvement, codified the laws, and founded a theological college at Paris. He undertook a second crusade in 1270 and, after taking the citadel of Tunis, in Africa, a pestilence broke out to which he succumbed. Boniface VIII. canonized him in 1287.

LOUIS XI., King of France, eldest son of Charles VII., born in Bourges, July 3, 1423; died Aug. 30, 1483. He succeeded his father in 1461 and soon after became involved in a war with Maximilian of Austria, because the latter had taken charge of vacant fiefs in France, but at length the controversy was settled by an agreement that the dauphin should marry Margaret, the daughter of Maximilian, and come into possession of Burgundy and Artois. His rule was generally severe on the vassals, who held land under the feudal system, and, besides increasing the number of parliaments in the provinces, he weakened the feudal vassals by extending the right of suffrage to the middle classes. He founded three universities, encouraged commerce and manufactures, and stimulated internal improvements. In 1481 he became affected by apoplexy, on account of which he shut himself in his castle in great fear of sudden death. It was his ambition to overthrow the power of the princes for the purpose of solidifying royalty and consolidating France, in both of which he succeeded to some extent. In 1469 the title of "Most Christian King" was conferred upon him by the Pope.

LOUIS XII., King of France, born at Blois, France, June 27, 1462; died Jan. 1, 1515. He was the son of Charles, Duke of Orleans, and during the reign of Charles VIII. opposed the policy of the court. Upon the death of the latter, in 1498, he ascended the throne and the next year married Anne of Brittany, widow of his predecessor. In 1500 he captured the city of Milan and joined Ferdinand of Aragon in conquering Naples, but the two disagreed about the partition of their conquest and engaged in a war, which resulted in the French being driven from Italy. He joined the League of Cambrai, formed by the Pope against Venice, in 1508, defeating the Venetians in the Battle of Agnadello. The Holy League, formed by Venice, Ferdinand, the Pope, and Henry VIII. of England, expelled the French from Lombardy. At the same time an English army invaded France and won the Battle of the Spurs, in 1513. As a part of the conditions of peace, Louis married Mary Tudor, sister of Henry VIII. Francis I., his son-in-law, succeeded him.

LOUIS XIII., King of France, son of Henry IV., born at Fontainebleau, Sept. 27, 1601; died May 14, 1643. His father was assassinated in May, 1610, and he succeeded to the throne under the regency of his mother, Maria de' Medici. He was declared of age in 1614 and the following year married Anne, daughter of Philip III. of Spain, and his mother was exiled from the court. His reign was marked by armed opposition of the Huguenots, during which Cardinal Richelieu had charge of the imperial forces so far as directing affairs was concerned, and a treaty of peace was concluded in 1623. Hostilities ceased only momentarily, because the mother of Louis incited civil war and encouraged the oppression of the Huguenots. However, the monarchy became strengthened under the guidance of Richelieu, the Protestant nobles were gradually weakened, and on Oct. 20, 1623, the Huguenot stronghold at Rochelle was captured, while the insurgents of the queen mother were defeated at Castelnaudary. For the purpose of humbling the pride of Spain and Austria, he sided with Gustavus Adolphus in the Thirty Years' War, on account of which France secured Alsace, Roussillon, and the duchy of Bar.

LOUIS XIV., King of France, born at Saint Germain-en-Laye, Sept. 16, 1638; died Sept. 1, 1715. In 1643 he succeeded his father, Louis XIII., under the regency of his mother, Anne of Austria, with Mazarin as the minister. He formed a friendship with Spain while in his minority, but that country encouraged the discontented nobles for the purpose of weakening the crown, and a war resulted, which was concluded in 1659. In the same year Louis married Maria Theresa, the daughter of Philip IV., of Spain. The king's early education had been neglected, hence it was not thought that he would become a vigorous ruler, but when Mazarin died, in 1661, he assumed control of the government with much energy and soon won the title of Louis the Great, and the saying "I am the State" became a popular term in France to designate his personality. The famous Colbert became his minister. During his incumbency important reforms were effected in the taxes and in the administration, and these were followed by improvements in the financial system, the construction of canals and highways, and the encouragement of manufacturing and educational arts.

Louis purchased Dunkirk from Charles II. of England in 1662, and, when his father-in-law died, he claimed Flanders and Franche-Comté, sending his armies there in 1667 under Condé and Turenne. A war with Holland began in 1672, and in six weeks he conquered half the country, but soon after an alliance was formed against him by Spain, Denmark, and William of Orange. The policy of his minister, Louvois, effected the enrichment of France at the expense of the conquered provinces, and the Treaty of Nimeguen, in 1678, confirmed his title to Franche-Comté and a portion of Flanders. At that time the court of Louis was the most splendid of Europe, being adorned by eminent men, philosophers, poets, statesmen, and generals. Maria Theresa died in 1683. The following year he married Madame de Maintenon and soon after secured the revocation of the Edict of Nantes, by which many thousands of progressive Protestants left France and carried their skill and industry to other lands.

An alliance formed against France by Holland, Germany, Sweden, Spain, England, and other countries, in 1686, caused him to lose many of the conquered possessions. In 1700, after the death of Charles II. of Spain, Louis claimed the Spanish throne for a grandson of his sister, who had been the queen of Louis of Spain. In this movement, known as the War of the Spanish Succession, he was opposed by a united Europe, in which the allies won in the battles of Blenheim, Ramillies, and Malplaquet, after which the Peace of Utrecht was concluded, in 1713. By it the French prince came in possession of the Spanish throne, but France lost some of its colonies. Though the reign of Louis was eminently successful at first, the latter portion became marked with languor in industrial arts on account of the extended wars. His great-grandson, Louis XV., succeeded him as king.

LOUIS XV., King of France, great-grandson of Louis XIV., born in Versailles, France, Feb. 15, 1710; died May 10, 1774. He succeeded to the throne on Sept. 1, 1715, under the regency of the Duke of Orleans, and in 1723 became ruler in fact. The period of regency became known for the financial schemes of John Law, by which the country came to a strained condition. On assuming the reins of government, he made Cardinal Fleury minister and about the same time married Maria, daughter of Stanislas Leczynski, the dethroned King of Poland. For the purpose of restoring his father-in-law to the throne of Poland, Louis became involved in war in 1733, by which his father-in-law secured Lorraine and later this territory was added to France. In 1740 he became involved in an extended war, known as the War of the Austrian Succession, which at first was disastrous to France, but in 1745 victories were won at Fontenoy, and the Treaty of Aix-la-Chapelle, in 1748, concluded peace. While enlarging the colonies of France, the war caused the finance and navy to become greatly weakened. The Seven Years' War, in which he became involved, began in 1756. It was carried to the colonies and resulted in Great Britain conquering Cape Breton, Canada, and large possessions in the East and West Indies, peace being concluded in 1763. In 1764 the Jesuits were expelled from France. Later financial embarrassments were brought upon the country by the extravagance and vices of Louis. At the time of his death France was in debt to the amount of $800,000,000.

LOUIS XVI., King of France, grandson of Louis XV., born in Versailles, Aug. 23, 1754; guillotined Jan. 21, 1793. He was a man of fine physique, skilled in manual arts and sciences, and grew up with the sincere regard of the better element. On May 10, 1770, he married Marie Antoinette, youngest daughter of Empress Maria Theresa of Austria, and in 1774 ascended the throne. He misunderstood the situation in France, giving himself up to festivities and the love of entertainment. The country being already impoverished, it was difficult to place the finances upon a basis of stability, and popular opposition to the privileged classes arose among the laborers and the comon people. It was during this time that the American colonies were battling for independence, and the people of France were in strong sympathy with the American movement, giving both financial and moral support to the cause espoused by the colonists.

LOUIS XVI.

In 1777 the general director, Necker, undertook to restore public credit on a more substantial basis by inaugurating a vigorous policy of taxation, placing the burdens upon poor and rich alike. He likewise instituted various internal reforms, improved the administration of justice, and sought the abolition of serfdom. These reforms were heartily supported by Louis, but were opposed by the aristocracy, and the opposition created by the latter led to the Revolution of 1789. Excited masses of people thronged the streets of Paris and eventually caused the destruction of the Bastille. In 1791 the king sought to escape from France, but was apprehended at Varennes and taken back to Paris. The royal palace was attacked on June 20, 1792, by the populace and the king fled to the National Assembly for safety, but was put under arrest. Soon after he was tried before the convention on a charge of conspiracy against national freedom, and was declared guilty by a vote of 690 out of 719 on Jan. 16, 1793. The following day he was condemned to be guillotined, which took place four days later. Immediately before execution he uttered these words: "I die innocent; I pray that my blood come not upon France."

LOUIS XVII., King of France, second son of Louis XVI., born in Versailles, March 27, 1785; died June 8, 1795. He was a boy of much promise, became dauphin on the death of his brother in 1789, and on the execution of his father remained a prisoner. Soon after he was forcibly separated from his mother and sister, and in 1793 was given to the care of a fanatical Jacobin, from whom he received the most cruel treatment, which terminated in the loss of his mental and physical strength. It was thought that his death resulted from poison, but a commission of physicians reported in opposition to this view. "Peasant and Prince" is a beautiful and pathetic account of his life, written by Harriet Martineau.

LOUIS XVIII., King of France, grandson of Louis XV., born in Versailles, Nov. 17, 1755; died Sept. 16, 1824. He was titled Count of Provence, married Maria, daughter of Victor Amadeus III, of Sardinia, in 1771, and received the title of monsieur at the time his brother, Louis XVI., ascended the throne, in 1774. When the latter sought to escape from France, the monsieur was more fortunate and reached Belgium in safety, whence he issued various manifestos that proved a serious damage to the king in relation to the Revolution. After the execution of Louis XVI., he proclaimed the son of the latter, Louis XVII., King of France. Immediately after the death of the latter he assumed the title of king, but spent a wandering life in different countries of Europe, receiving support from Bourbon friends and foreign courts. In 1807 he purchased a residence in England, where he remained until the fall of Napoleon, and then returned to France as the sovereign, entering Paris in May, 1814. When Napoleon returned from Elba, Louis fled from France, but after the disaster at Waterloo he was replaced on the French throne by the allies. His reign was characterized by severe opposition to Protestants and adherents of the Revolution, and was far from being liberal and constitutional. He was succeeded by his brother, Charles X.

LOUIS I., King of Portugal, second son of Queen Donna Maria II. and of the Prince of Saxe-Coburg, born in October, 1838; died in Lisbon, Oct. 18, 1889. On Nov. 11, 1861, he succeeded his brother, King Pedro V., as King of Portugal, married the youngest daughter of Victor Emmanuel, King of Italy, in 1862, and ruled the Portuguese with much liberality and fairness. Besides being a man of culture, he was faithful to the constitution and devoted to literature. His translations include Shakespeare's "Hamlet," "Merchant of Venice," and "Richard III." He was succeeded by his son, Carlos, who was born in 1863 and assassinated in 1908.

LOUIS II., King of Bavaria, born in Nymphenburg, Germany, Aug. 25, 1845; died near Munich, in 1886. He was the grandson of Ludwig I. (1786-1868), King of Bavaria, and succeeded his father, Maximilian II., as king on March 10, 1864. In 1866 he supported Austria against Prussia, but in the War of 1870-71 he gave vigorous support to the Prussian army against France. He possessed an intense love of the beautiful in art and nature, but toward the latter part of his life became a recluse, which at length brought about mental weakness and his sad death by drowning.

LOUISA (lo͞o-ē′zȧ), Queen of Prussia, surnamed the "Good Queen," born in Hanover, Germany, March 10, 1776; died July 19, 1810. She was the daughter of Charles, Duke of Mecklenburg-Strelitz. In 1793 she married the Crown Prince of Prussia, afterward Frederick

William III., and as queen commanded universal respect and affection. No life in German history shows a greater devotion and patience than hers in relation to the war between Prussia and France. She accompanied her husband to Königsberg immediately after the Battle of Jena, and, when Prussia was brought to the mercy of Napoleon by the battles of Eylau and Friedland, she made a personal appeal to Napoleon at Tilsit for peace in her country. Among the institutions founded in her honor are the Louisa School for Girls, the Prussian Order of Louisa, and the Louisa Governess' Seminary. She was the mother of the Prussian kings, Frederick William IV. and William III.

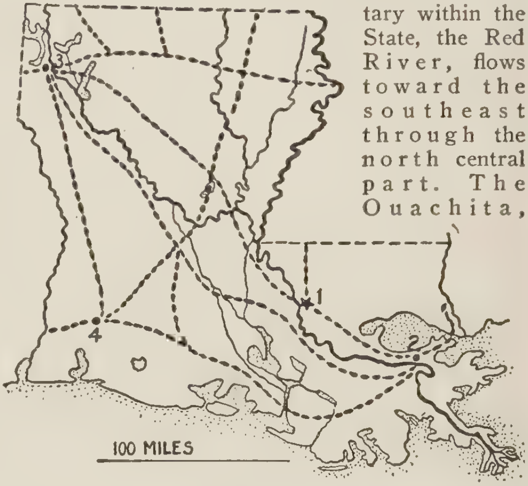
LOUISBURG (lo͞o′ĭs-bûrḡ), a fortress built by the French on the southeastern coast of Cape Breton Island, in Nova Scotia, after the Peace of Utrecht in 1713. In the war between France and England, beginning in 1744, the fort was taken by New Englanders, but the Peace of Aix-la-Chapelle restored it to France in 1748. General Wolfe besieged Louisburg in 1758 and compelled the French garrison to surrender, after which the town was destroyed entirely and has since remained in a ruined condition. The fortress cost France $5,000,000 and was regarded the strongest in America. The town situated on its site is made up largely of fishermen. It has a lighthouse, a good harbor, and a considerable trade in fish and produce.

LOUISIADE (lo͞o-ē-zē-äd′), a group of islands located near the southeastern coast of British New Guinea. The three largest islands are Rossel, Southeast Island, and Saint Aignan, with a total area of about 650 square miles. The surface is mountainous in the larger islands, while the smaller islets are level and of coral formation. The inhabitants consist chiefly of savage Papuans. For the purpose of administration they are attached to British New Guinea. These islands were discovered in 1606 and have belonged to Great Britain since 1888.

LOUISIANA (lo͞o-ē-zē-ä′nȧ), a southern state of the United States, popularly called the *Creole State.* It is bounded on the north by Arkansas, east by Mississippi and the Gulf of Mexico, south by the Gulf of Mexico, and west by Texas. The northern part is separated from Mississippi by the Mississippi River and the southern part by the Pearl River, and about two-thirds of the western border is formed by the Sabine River. From north to south the State has a length of 280 miles and its greatest breadth is 290 miles. The area is 48,720 square miles, which includes a water surface of 3,300 square miles.

Description. The surface has a general elevation of 75 feet above sea level, its highest altitude being not more than 500 feet. The highest point of land is in the northern part, in Claiborne and Union counties. Large areas of the surface are made up of alluvial deposits, which include many coast swamps and a considerable number of inland lakes formed through the deposit of silt by the Mississippi. Vast levees extend along both sides of the Mississippi in various sections to prevent the overflow of these alluvial lands during high water. The portion of the State lying south of a line drawn east and west a short distance south of Lake Pontchartrain is within the alluvial plain, while the region lying toward the north is gently undulated.

The general slope is toward the south, which is the direction of its water courses. The Mississippi, which forms a part of the eastern border and flows diagonally through the southern part, furnishes navigation for 600 miles. Its largest tributary within the State, the Red River, flows toward the southeast through the north central part. The Ouachita, (or Washita), Atchafalaya, Pearl, and Sabine are important for their navigation facilities. Many of the tributaries of the Mississippi are locally called *bayous,* many of which are navigable, and as a whole they are important in taking off the excess water during floods. Some of the streams, like the Red and the Ouachita, have a width of from four to twenty miles at various points. The State has a large number of lakes, some of which are inland, but many of them form inlets from the Gulf of Mexico or from the larger rivers. Lakes Sabine, Grand, and Pontchartrain are connected with the coastal waters and are more or less brackish. Another class of lakes, those formed in channels which have been cut off by changes in the river courses, are crescent or in the form of arcs of a circle, and at the lower end are connected with the river by a bayou. Many of these lakes have brackish water and the level rises and falls with the tide. All of the great delta of the Mississippi is within the State.



LOUISIANA.

1, Baton Rouge: 2, New Orleans; 3, Shreveport; 4, Lake Charles. Principal railroads shown by dotted lines.

The soil and climate of Louisiana are alike favorable to the growth of luxuriant vegetation. Being located near the gulf, the State has an equable climate. At New Orleans the mean annual temperature is about 68°, while the general temperature ranges from 45° to 96°. However, it frequently attains to 100° in the summer season, but the freezing point is rarely reached in any section of the State. All parts of the State have an abundance of rainfall, which averages 50 inches in the northern part and 60 in the delta region. Clouds and mists obstruct the sunshine about half of the time in the winter and fully 40 per cent. of the time during the summer season.

Mining. The mineral resources are worked extensively, especially the deposits of salt, gas, sulphur, and petroleum. In the vicinity of Lake Charles, Jennings, and Shreveport are large oil fields, which extend into the State from Texas. The salt deposits are next in importance, occurring as solid beds of salt rock from 40 to 900 feet thick, found chiefly in a region stretching from the Parish of Plaquemines to Abbeville and in the parishes of Iberia, Vermilion, and Saint Mary. A good quality of lignite and bituminous coal is obtained in the southwestern part. Calcasieu Parish formerly had the most noted sulphur mines in the world. Lead deposits occur in different sections, and gypsum and limestone are worked extensively.

Forests and Fisheries. Louisiana is rich in timber and has more or less extensive forest areas in all parts of the State, especially in the northern section and along the Red River. Valuable cypress trees abound in the swamps and many species of oak, including the live oak, occur in large areas. Other trees that are well represented embrace the magnolia, pine, poplar, beach, cottonwood, cedar, and black walnut. Many varieties of fruits are cultivated, such as the fig, lemon, peach, plum, olive, banana, and pomegranate. The jasmine, oleander, and roses are well represented.

In the value of fisheries Louisiana holds second rank among the states bordering on the Gulf of Mexico. Along the southern shore are extensive oyster fisheries. The catfish and shrimp are caught more extensively than in any other State. Alligators, though formerly very abundant, are not found to any great extent at present, but the hide has increased greatly in value.

Agriculture. A large per cent. of the surface is utilized for agriculture and the only uncultivated land is in the coast marshes and forests, but these furnish good pasturage. The soil is inexhaustible in fertility and all of the State has a favorable temperature and sufficient rainfall. Formerly farming was done largely by the plantation system of cultivation, hence many of the farms were large and were worked by tillers who resided on small divisions of the large estates. A majority of the tenants are Negroes, but the ownership of the land is vested very largely in white proprietors. Corn and cotton are the two leading crops, and the area cultivated in either exceeds largely that utilized in any other crop. Though the area devoted to the cultivation of cotton is about the same as that utilized in growing corn, the value of the cotton crop is about double that of corn, hence is the staple product. Sugar cane takes third rank in the area, but the value of the product rivals that of cotton. Rice is grown in the delta parishes and the prairie coast region toward the west, and in this product the State takes very high rank. Oats, hay, peas, fruits, and vegetables are other important products. Much attention is given to the cultivation of strawberries and a large part of the yield is shipped to the northern markets early in the season.

Stock raising is of growing importance and compares favorably to this industry in the northern states. Horses and mules are reared in large numbers, both for the market and for tilling purposes. Considerable interests are vested in cattle raising, especially for the production of milk and butter. Swine are grown profitably and the young are able to thrive in the fields and forests almost without feeding. The State has about 1,500,000 swine. Much attention is given to sheep and poultry raising.

Manufacturing. Rapid development has been made the last two decades in the output of manufactures. Cotton, rice, and sugar cane are important in the manufacturing enterprises of the State, and the refining of sugar has been growing in importance. In the value of the output sugar and molasses take first rank, but these are followed closely by lumber products and cottonseed and oil. Other manufactures include rice products, machinery, bags, railway cars, tobacco products, and canned fruit and oysters.

Commerce and Transportation. The port of New Orleans ranks second in the value of foreign trade, being exceeded only by the port of New York. Among the chief exports are cotton, flour, sugar, lumber, rice, and cereals. The imports include machinery, coffee, and clothing. It has larger transportation facilities by water than any state in the Union, owing to its location on the Gulf of Mexico and many navigable streams, the latter affording transportation for a distance of 3,750 miles. At present 5,150 miles of railways and numerous electric lines are in operation. Though transportation facilities are afforded by railways in all parts of the State, the majority of lines run through it from north to south. New Orleans and Shreveport are the principal railway and manufacturing centers.

Government. The State is governed under a constitution adopted in 1913, by which the chief executive authority is vested in a governor, lieutenant governor, treasurer, auditor, and secretary of State, each elected for terms of four years. The Legislature consists of two branches, the senate and house of representatives, and members in each branch are elected for four years. The constitution provides that the number of senators cannot exceed 41 and the number of representatives cannot be more than 120 members. A chief and four associate justices constitute the supreme court, and these officials are appointed by the Governor and the senate for terms of twelve years. Subordinate to this court are the court of appeals, the district courts, and the municipal and justice courts. The State is divided into parishes, which correspond to the counties in other states, and local government is administered according to the civil law introduced by the French.

EDUCATION. Public schools are maintained under a State board of education, consisting of the governor, superintendent of education, attorney-general, and one member from each congressional district. This board appoints the school directors for each school parish, these officials serving for terms of four years. Parish superintendents are elected by the school directors, who fix the salaries within certain limits. The general system provides for elementary and higher education, with separate schools for the white and colored children Higher education culminates in the Louisiana State University and Agriculture and Mechanical College, at Baton Rouge, which is supported in part by the State and by the Federal governments. All residents of the State are admitted at a small tuition into this institution. Teachers are encouraged to extend their academic courses by permitting graduates from the university and the State normal school to teach without passing an examination. Natchitoches and New Orleans have State normal schools. Although the per cent. of illiteracy is higher than the average for the Union, there has been a constant improvement. Among the native white population the illiteracy is 17.3 per cent. and among the Negro inhabitants of ten years and over it is 61.1 per cent.

Louisiana has a large number of excellent institutions of higher learning, including Tulane University, at New Orleans, which ranks as one of the leading educational centers in the South. Other noted institutions include the Southern Baptist University, New Orleans; the Thatcher Institute, Shreveport; the Baptist Leland University for Negroes, New Orleans; the Loyola University (Catholic), New Orleans; the Saint Charles College, Grand Coteau; the Southwestern Industrial Institute, Lafayette; the College of the Immaculate Conception, New Orleans; and the Centenary College, Jackson. Baton Rouge has schools for the blind and deaf, Jackson has an asylum for the insane, and charitable hospitals are maintained at Shreveport and New Orleans. Formerly the convicts were leased, but they are now put to work upon farms or in industries owned and controlled by the State.

INHABITANTS. A large element in the present population is of French descent, due to the fact that Louisiana was settled in its early history by immigrants from France. The largest immigration from other states and foreign countries came in after the Civil War, though the foreign born population is not large. Baton Rouge, on the Mississippi, is the capital. The chief cities include New Orleans, Shreveport, Lafayette, New Iberia, Crowley, Bogalusa, Alexandria, Plaquemine, Lake Charles, Donaldsonville, and Monroe. In 1900 the State had a population of 1,381,625. This included a colored population of 652,013, or 47.2 per cent. The colored inhabitants included 650,804 Negroes. Population, 1920, 1,797,798.

HISTORY. The history of Louisiana dates from 1541, when it was discovered by De Soto. La Salle took possession of it in 1642 for France, naming it after Louis XIV. Iberville ascended the Mississippi for 200 miles in 1699, but returned to the present site of Biloxi and established a fort and the first permanent settlement. Soon after Bienville, the governor of the colony, made a settlement at New Orleans, and John Law secured control of the colony in his Mississippi scheme about 1717. France ceded the territory to Spain in 1762, but again received title to it in 1800. It was Napoleon's ambition to found a New France in America, but in 1803 he was induced to sell it to the United States. The Territory of Orleans was formed in 1804, and in 1812 it was admitted into the Union as the State of Louisiana. The final batttle of the War of 1812 was fought at New Orleans on Jan. 8, 1815, after peace had been made at Ghent, but before the news had reached America. From that time the development of the State made rapid strides, expanding agriculture and manufacture, New Orleans becoming the most important cotton market and port of the South.

On Jan. 26, 1861, the State seceded from the Union and cast its fortunes with the Confederacy. In the spring, on April 25, 1862, New Orleans was captured by the United States forces. During the war it was an important point because of the many engagements which occurred on the Mississippi River. After the war a carpet-bag element harassed the State during the reconstruction period. The Fourteenth amendment to the Federal Constitution was ratified in 1877 and the construction of levees and river jetties began about the same time. The Louisiana State Lottery was abolished in 1891. In the past quarter of a century the State developed rapidly in every material line, building railroads, canals, cities, and educational institutions.

LOUISIANA, a city of Pike County, Missouri, on the Mississippi River, 85 miles northwest of Saint Louis. It is on the Chicago and Alton and the Chicago, Burlington and Quincy railroads and has a good landing for steamboats. Among the chief buildings are the public library, the high school, and a number of churches. The manufactures embrace flour, tobacco, building stone, lumber, and earthenware. The surrounding country is fruit growing and lumber producing. It has a large trade in grain and live stock. Population, 1900, 5,131; in 1920, 4,060.

LOUISIANA PURCHASE, the most important annexation made to the territory of the original thirteen states of the American Union. The purchase included a vast region extending from the Gulf of Mexico to the British possessions, west of the Mississippi River. Within its confines is included all the portion of the United States which is situated west of the Mississippi River, except Texas, California, a portion of Oregon, the Gadsden purchase from Mexico, the Mexican cession, and Alaska. It is now subdivided into thirteen states and embraces a population of nearly 20,000,000 people. The enterprise of coming into possession of this vast region was consummated by Thomas Jefferson, who appointed James Monroe as a minister to act with Robert R. Livingston at the French court. The treaty was signed April 30, 1803, and the stipulated price was $15,000,000, of which the sum of $3,750,000 represented claims of American citizens against France, which the United States agreed to assume. Livingston said regarding this purchase, "We have lived long, but this is the noblest work of our whole lives;" while Napoleon is quoted as saying, "I have just given to England a maritime rival that will, sooner or later, humble her pride."

LOUISIANA PURCHASE EXPOSITION, an international exhibition of the United States, at Saint Louis, Mo., in 1904. It was held to celebrate the one hundredth anniversary of the purchase of Louisiana from France, which was consummated in 1803. The site included a tract of about 1,000 acres in the west part of the city, made up chiefly of Forest Park and the campus of Washington University. Forty-two states and many foreign nations were represented by buildings and exhibits of their arts and industries. The architecture of the buildings and the landscape gardening were exquisite in taste and effect, and both the grounds as a whole and the exhibits were never surpassed in any of the great international exhibitions. Fifteen large exhibition buildings were erected by the management, including the beautiful structure known as the Cascades, and in addition there were the large building designed by the United States government and numerous structures erected by the several states and foreign nations. The sunken gardens, the floral clock, the network of lakes, the exhibit of Philippine life and products, the display of wireless telegraphy, the Ferris wheel, and the extensive display of electric machinery were among the notable features. The Pike was the popular amusement feature, similar to the Midway of the Columbian Exposition at Chicago.

To promote the exposition and insure its success, a fund of $15,000,000 was pledged. This included a donation of $5,000,000 by the citizens of Saint Louis and equal amounts by the city of Saint Louis and by the United States government. An expenditure of $1,500,000 was made by Congress for the government exhibit and $1,000,000 for the Philippine exhibit. The buildings erected by the several states cost about $7,000,000, and a like sum was expended in the construction of buildings by foreign nations. The receipts from all sources were reported at $10,162,380 and the attendance was 18,741,073.

LOUISIANA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE, an institution of higher learning maintained by the State of Louisiana, at Baton Rouge. It was founded in 1855 as a State seminary and opened at Alexandria, La., in 1860 under the superintendency of William T. Sherman, who later became prominent as a Union general in the Civil War. The United States government granted the buildings and grounds at Baton Rouge, to which place it was removed in 1886. The courses include commerce, literature, classics, general science, agriculture, and mechanical and civil engineering. Associated with it are three experiment stations, located at Crowley, Calhoun, and New Orleans. It has a library of 85,000 volumes and it attended by 1,950 students. The property has a value of $7,000,000. A large part of the income is derived from the State and the Federal governments.

LOUIS NAPOLEON. See **Napoleon III.**

LOUIS PHILIPPE (lōō-ē′ fē-lēp′), King of France, born in Paris, Oct. 6, 1773; died at Claremont, near London, England, Aug. 26, 1850. He was the eldest son of Louis Philippe Joseph, Duke of Orleans, secured a liberal education, and entered the national guard. His liberal views caused his conscription, but in 1793 he escaped to Austria, remaining an exile from France about twenty years. In the early part of his absence from France he was a teacher of mathematics and geography in Switzerland. Later he went to North America, and, after visiting various portions of the United States, he returned to England in 1800. He married Marie Amelie, daughter of Ferdinand I. of Sicily, in 1809, and in 1814 returned to Paris. Louis XVIII. and his court looked upon him with distrust, but he became highly popular with the people, and after the second restoration his vast estates were recovered from the government. Immediately after the Revolution of 1830 he was appointed lieutenant general of the kingdom, and on August 9 of the same year became constitutional monarch of France. His policy was favorable to enlarged trade relations with foreign powers. He advocated betterment of the condition of the middle classes, the enlargement of educational facilities, and a repression of extremism in politics, all of which were conducive to the common good. However, his policies led to dissatisfaction among his opponents. Several attempts were made upon his life and in 1848 a general insurrectionary movement was inaugurated that forced him to abdicate, which he did on Feb. 24 in favor of his grandson, the Count of Paris. The Chamber of Deputies refused to recognize the boy as king and Louis was compelled to flee from France, spending the remainder of his life in England. His remains were taken to France, in 1872, by permission of President Thiers.

LOUISVILLE (lōō'is-vil), a commercial and railway city of Kentucky, county seat of Jefferson County, on the Ohio River, about 400 miles above its mouth and 115 miles southwest of Cincinnati, Ohio. It is on the Baltimore and Ohio, the Big Four, the Louisville and Nashville, the Pennsylvania, the Illinois Central, the Southern, and the Chesapeake and Ohio railroads, connecting it with the principal commercial centers in the central part of the United States. A series of rapids characterize the Ohio at this place, hence a canal is maintained so steamboats may avoid the rapids at the time of low water. New Albany and Jeffersonville, both in Indiana, are connected with the city by three bridges, one of which is a mile in length.

The city is located on a site fully 60 feet above high-water mark, hence is free from the danger of overflow. It extends along the river front a distance of about eight miles and includes an area of forty square miles. The country in its vicinity is rich in coal, iron, timber, and agricultural resources. It has regularly platted streets, many of which are paved with brick, asphalt, and granite, and the avenues are shaded with beautiful trees. The principal business establishments are located on Jefferson, Maine, Market, and Fourth streets, and on the intersecting streets from First to Sixteenth. Electric street railways furnish communication to all parts of the city, and the system is connected with lines penetrating long distances into the country.

The rise of Louisville as a commercial center is due to its railway and river transportation facilities, through which it has acquired a large jobbing and export trade. It has obtained vast benefits from its location in a region which is rich in mineral and agricultural resources. As a market for tobacco it takes rank as of first importance in North America. Having large slaughtering industries, it is a center of pork packing, much of the output being exported. It has large grain elevators and an extensive trade in produce. Cigars and various tobacco products are manufactured extensively. Other manufactures include flour, leather, soap, ironware, cement, boots and shoes, clothing, brass fittings, and machinery.

The architecture is modern and substantial, which is evidenced by such structures as the city hall, the county courthouse, the Masonic Temple, the customhouse, the commerce building, and the board of trade building. It has about 400 churches, representing all the leading denominations. They include the Episcopal Christ's Church cathedral, the Broadway Baptist, the Roman Catholic cathedral, the Second Presbyterian, the Warren Memorial, the Church of the Messiah, and the Temple Adas Israel. It is the seat of the Jefferson County Armory, which provides a convention hall with capacity to seat 12,000 persons, and is used for large conventions and indoor carnivals. The public schools are well organized and buildings ranging from the lower grades to the high school are maintained in the different parts of the city. Higher learning is promoted by the University of Louisville, the St. Xavier's College, the Southern Baptist Seminary, and several academies. It is the seat of the State school for the blind, with which is connected the American Printing House for the Blind. The public grounds embrace about 1,800 acres, included principally in Cherokee, Iroquois, and Shanee parks. The city contains a monument to Confederate soldiers, the grave of Zachery Taylor, and statues of Thomas Jefferson and Henry Clay. Cave Hill Cemetery is one of the finest burial grounds.

The first settlement on the site of Louisville was made in 1778, when Col. George Rogers Clarke and a number of others located near the Ohio Falls. The town had a population of 60 in 1780, when it was incorporated and named Louisville in honor of Louis XVI. of France. At that time it was under the jurisdiction of Virginia. The Legislature of Kentucky granted it a charter as a city in 1824, since which time it has enjoyed a constant growth. A majority of the people sympathized with the Union during the Civil War. It was visited by a tornado in 1890, when property valued at $3,000,000 was destroyed. Population, 1920, 234,891.

LOUSE, a parasitic bug of the suborder *Parasita*, which obtains food by sucking the blood of animals and the juices of plants. These insects are widely distributed and include many species. The common louse is the best known of the species that prey on man. It has a suctorial mouth, simple eyes, little marks of difference between the abdomen and thorax, and three pairs of legs attached to the segments of the thorax. The female is oviparous, producing eggs properly called *nits*. In five or six days the young are hatched, and after eighteen days they are capable of reproduction. Properly there are three species of lice parasitic on man under certain circumstances: the *head*, or *common louse;* the *body*, or *clothes louse;* and the *pubis*, or *crab louse*. Many species of lice are parasitic on birds, bees, wasps, beetles, fishes, and plants.

LOUVAIN (lōō-văn'), a city of Belgium, in the province of Brabant, eighteen miles east of Brussels. It is on the Dyle River and has steamboat facilities through the Louvain Canal. Among the noteworthy buildings are the Church of Saint Joseph, the Church of Saint Gertrude, the Union railway station, the athenaeum, the post office, and a noted university, containing a library of 250,000 volumes. This institution formerly had an attendance of 6,000 students, but at present has less than 2,000. The manufactures include machinery, spirituous liquors, cotton and woolen goods, lace, leather, and musical instruments. Its numerous parks and gardens are decorated with fine sculptures. Some of the public buildings are among the finest in Europe. Louvain was the capital of Brabant in the 14th century, when it had a population of 200,000. It was visited by the plague in the 16th century. The Germans captured it in 1914. Population, 1922, 42,685.

LOUVRE (lōō'vr'), a celebrated palace in Paris, France, situated near the Seine River, near the central part of the city. The name properly is *The Palace of the Louvre,* which includes an extensive group of buildings. The older portion of it was a royal residence of King Dagobert in 628. Louis XIV. enlarged and beautified the building. Napoleon I. commenced the new Louvre, and Napoleon III. completed it in 1857. The palace has several wings and galleries, all of which are distinguished for their elegance and sumptuous architecture. The more ancient part is now used as a depository for rare specimens of paintings, sculptures, and antiquities from all countries and all ages. In connection with it is a large public library with the national archives attached. Napoleon's expedition to Egypt and the Italian campaign added many valuable treasures to the already extensive collections in the Louvre. The only works admitted to its galleries are productions of deceased artists. In 1871 the Communists committed serious injury to several portions of the palace, when about 90,000 volumes of the imperial library in the Richelieu pavilion were destroyed. Baron Rothschild, in 1873, presented to the museum many relics discovered in the ruins of a temple of Apollo at Miletus.

LOVEJOY (lŭv'joi), **Elijah Parish,** abolitionist, born in Albion, Me., Nov. 9, 1802; died Nov. 7, 1837. He studied in Saint Louis, Mo., and at Princeton Theological Seminary, and became a minister of the Presbyterian Church. In 1803 he became editor of the *Saint Louis Observer,* a Presbyterian periodical, and made it a strong advocate of the abolition of slavery. Having incurred opposition among the proslavery element, he removed his press to Alton, Ill., where his establishment was destroyed three times by mobs. He defended the office when the fourth attack was made upon him by a mob of forty men, during which he was shot and mortally wounded. Wendell Phillips made this occurrence the occasion of many antislavery addresses. A monument was erected to the memory of Lovejoy in the city of Alton, through an appropriation made by the Legislature of Illinois.

LOVELACE (lŭv'lās), **Richard,** poet and dramatic writer, born in Woolwich, England, in 1618; died in 1658. He was the son of Sir William Lovelace, studied at Oxford, and in 1639 joined an expedition to Scotland. In the controversies of Charles I. he showed much fidelity to that monarch, spending his entire fortune for his interest. His writings embrace "The Scholar," "To Althea from Prison," and "To Lucusta on Going to the Wars." His devotion to Charles I. caused him to be imprisoned at various times, but he remained faithful to the king. In his work entitled "To Althea from Prison" appear the familiar lines, "Stone walls do not a prison make, nor iron bars a cage."

LOVER (lŭv'ẽr), **Samuel,** author, born in Dublin, Ireland, Feb. 24, 1797; died July 6, 1868. He began as a painter at an early age, but soon adopted a literary career. His early writings, which consist chiefly of songs and ballads, were illustrated by his own portraits and drawings. In 1844 he originated a line of entertainments called *Irish Evenings,* and these he performed in many parts of Canada and the United States. His books include "Rory O'More," "Handy Andy," "Treasure Trove," "Songs and Ballads," and "Legends and Stories of Ireland."

LOW (lō), **Seth,** educator and public man, born in Brooklyn, N. Y., Jan. 18, 1850. He graduated from Columbia College in 1870 and studied law, but soon after engaged with his father in the tea-importing business. In 1881-85 he was mayor of Brooklyn, and became president of Columbia College in 1890, where he showed marked efficiency in placing that institution on a university basis. He presented Columbia College with a library building in 1895, estimated at a value of $1,000,000. He served as a member of the Greater New York Commission and was a candidate for mayor, but was defeated, the vote being as follows: Robert A. Van Wyck, Democrat, 228,531; Seth Low, Independent, 148,215; and Benjamin F. Tracy, Republican, 101,194. Low has been accorded distinguished honors in many educational and scientific societies. He was elected mayor of New York City in 1901. He died Sept. 17, 1916.

LOW, Will Hicock, artist, born in Albany, N. Y., May 31, 1853. He studied in New York and was engaged there two years as illustrator for magazines. In 1873-75 he studied under Carolus-Duran in Paris and on his return to America, in 1877, was elected member of the Society of American Artists. He was awarded a medal at the Paris Exposition in 1889 for excellent specimens of glass painting. However, he is best known by his illustrations published in periodicals and decorative work for public buildings. He designed the diploma of award for the Columbian Exposition at Chicago in 1893, and produced numerous stained-glass products that have been highly commended. His more important works include "May Blossoms," "Homage to Venus," "Telling the Bees," "Portrait of Albani," and the stained-glass window in Rock Creek Church, Washington, entitled "Mother and Child."

LOW ARCHIPELAGO, a group of coral islands in the Pacific Ocean, located east of the Society Islands. They are sometimes called the *Tuamotu Islands* and are divided into a number of groups. The area is about 360 square miles. Fruits, pearls, and copra are the chief products. The islands have been a possession of France since 1844. Fakarava, the capital and principal port, is located on an island of the same name. Population, 1922, 7,125.

LOWELL (lō'ĕl), a city of Massachusetts, one of the county seats of Middlesex County, on the Merrimac River, 25 miles northwest of Boston. It is on the Boston and Maine, the New York, New Haven and Hartford, and a number of electric railways. The site is hilly and the river has a fall of 33 feet, thus affording splendid water power for manufacturing. About fourteen square miles are included in the area of the city.

Lowell is important as a commercial and manufacturing center. It is one of the largest producers of cotton and woolen goods in the world. Other manufactures include leather, machinery, engines, hardware, patent medicine, carriages, paper, clothing, carpets, and utensils. It has an extensive trade in manufactures and merchandise. Lowell was founded in 1822 and was named from Frances C. Lowell (1775–1817), a noted merchant and manufacturer. It was incorporated as a town in 1826 and was chartered as a city in 1836. Population, 1925, 110,296.

LOWELL, Amy, author, born in Brookline, Mass., Feb. 9, 1874. She was educated in private schools and received a degree at Baylor College in 1920. She lectured extensively and wrote many worthy publications. Her books include "Tendencies in Modern American Literature," "Men, Women and Ghosts," and "Life of Keats."

JAMES RUSSELL LOWELL.

LOWELL, James Russell, poet and diplomatist, born in Cambridge, Mass., Feb. 22, 1819; died there Aug. 12, 1891. His ancestors were among the eminent families of Boston. He was the son of Charles Lowell, a Unitarian minister of Boston, graduated at Harvard University in 1838, when he recited a class poem, and two years later was admitted to the bar. He visited Europe in 1851 and again in 1855, but returned in the latter year to succeed Longfellow as professor of modern languages at Harvard. When the *Atlantic Monthly* was established, in 1857, he became its editor, a post which he filled successfully for six years. Subsequently he was connected for ten years with the *North American Review.*

Lowell was naturally interested in literature from the early years of his life, his first publication appearing in 1841, entitled "A Year's Life and Other Poems." In 1844 he issued a second volume of poetry, and the next year published "Conversation on Some of the Old Poets," a book now out of print, but interesting because the young student showed marked enthusiasm in a channel wholly neglected in America, intimating a line of thought and study in which he afterward made most noteworthy ventures. In 1848 he published another volume of poems, and in the same year appeared the "Vision of Sir Launfal." The "Biglow Papers" was published in 1846. It comprises a work directed against the Mexican War and slavery and caused the young author to be read extensively. A second series of "Biglow Papers" appeared while the war for the Union was progressing, in which wit is mingled with a deep strain of feeling and a large tone of patriotism.

In 1877 he was appointed minister to Spain by President Hayes, from which he was transferred to England in 1880, but his duties in these positions did not deter him from producing occasional writings. His works of that period are chiefly in touch with political events; notable among them is an address at the unveiling of a statue of Fielding and his address on "Democracy." In 1885 he returned to the United States and devoted the closing years of his life to literary work. His wife, Maria White Lowell, was born July 8, 1821, and died Oct. 27, 1853. *Elmwood,* the old family mansion, was the scene of both his birth and his death. Among his writings not mentioned above are "Fable for Critics," "Among My Books," "Commemoration Ode," "My Study Windows," "Under the Willows," "Memorial Poems," "Fireside Travels," "The Pioneer," "Political Addresses," and a collection of later poems, entitled "Hearts-ease and Rue." His complete works were revised in 1890 and published in ten volumes.

LOWDEN, Frank Orren, public man, born at Sunrise, Minn., Jan. 26, 1861. For some time he was a member of the Republican national committee, served as congressman from Illinois from 1906 to 1911, and in 1916 was elected governor of his state. Many states, in the primaries of 1928, instructed their delegations to support him for President.

LOWNDES (loundz), **William,** statesman, born at Charleston, S. C., Feb. 7, 1782; died Nov. 22, 1822. He studied at Charleston College, was admitted to the bar in 1804, and soon became a planter in his native state. The Legislature of South Carolina nominated him for President in 1821, but this honor he did not fully accept, fearing that he might hurt the chances of electing Calhoun. Henry Clay classed him as the wisest man he ever knew, largely from his efficiency in national legislation subsequent to the War of 1812.

LOYALTY ISLANDS, a group of islands in the South Pacific, situated sixty miles east of New Caledonia. The area is 1,050 square miles. They are of coral formation and have a level surface. Among the products are cotton, cereals, live stock, and tropical fruits. The most important islands of the group include Lifu, Uea, and Maré. These islands have belonged to France since 1864 and for the purpose of government are attached to New Caledonia. Population, 1922, 19,493.

LOYOLA (loi-ō′lȧ), **Ignatius of,** theologian, born near Azpeitia, Spain, in 1491; died in Rome, Italy, July 31, 1556. He became a page to King Ferdinand at the age of fourteen, but soon after entered the army. He distinguished himself in 1521 while defending Pamplona against the French, where he was severely wounded, taken prisoner, and held by the French in confinement for a long time. During this period he spent much time in reading books devoted to religious topics, and gave particular attention to a volume of the "Life of the Saints." Being greatly impressed by its spiritual admonitions, he resolved to renounce the world and devoted his energies to the Christian cause. In 1522 he took the vow, soon after visited Rome and Jerusalem, and in 1524-27 studied at Barcelona, Alcalá, and Salamanca. The following year he began a seven years' course of training in theology at Paris, and in 1534 founded the Order of the Jesuits. In 1540 the order was confirmed with certain limitations by Pope Paul III., and Loyola made Rome his headquarters for the superintendence of the society. Paul V. beatified him in 1607 and Gregory XV. canonized him in 1622. The Roman Catholic colonists of Maryland chose him as patron saint of the colony. His festival occurs on July 31.

LOYSON (lwä-zôn′), **Charles,** better known as *Père Hyacinthe,* eminent divine, born in Orleans, France, March 10, 1827; died Feb. 9, 1912. He took a course of instruction in theology at Saint Sulpice, Paris, was ordained priest in 1851, and engaged to teach philosophy and theology at Avignon and Nantes. Subsequently he attracted large congregations as a Carmelite minister at Paris, all classes of people coming to hear him in his boldness and eloquence, but in 1869 he was silenced by an order for denouncing abuses in the church. To this he replied in an open letter, for which he was excommunicated, and in 1869 visited in the United States. About the same time he assumed his family name, Loyson, married an American lady at London, in 1872, and in 1879 established a congregation at Paris independent of the Catholic Church. Besides publishing a number of works on religious themes, he made public several volumes of lectures and sermons.

LUBBOCK (lŭb′bŭk), **Sir John,** banker, scientist and parliamentarian, born in London, England, April 30, 1834. After taking an elementary course of study, he became associated with his father's banking house at the age of fourteen and was made a partner in 1856. In 1870 he entered Parliament, was reëlected for the University of London in 1886, and is noted as an advocate of financial and educational reforms. From 1872 to 1880 he served as vice chancellor of the University of London, became president of the British Association for the Advancement of Science in 1881, and held other distinguished positions. He retired from Parliament in 1900, when he was elevated to the peerage as Lord Avebury. His writings include important works on a wide range of subjects, those relating to insects and plants being of especial value. Among his principal works are "Races of the British Isles," "Fifty Years of Science," "Origin and Metamorphosis of Insects," "Ants, Bees, and Wasps," "Flowers, Fruit, and Leaves," "Contribution to the Knowledge of Seedlings," "The Pleasures of Life," "The Scenery of Scotland," "Senses, Instinct, and Intelligence of Animals," and "The Use of Life." He died May 28, 1913.

LÜBECK (lü′bĕk), a free city of Germany, on the Trave River, 38 miles northeast of Hamburg. The area included in the free territory is 115 square miles. It has extensive railroad facilities, well graded and paved streets, and systems of waterworks and electric street railways. Among the chief buildings are the Church of Saint Mary, the Church of Saint Catharine, the public library, the Union railway station, and the post office. It is the seat of many hospitals and contains the Rathhaus in which the deputies of the Hanseatic League held their meetings. The manufactures include cotton and woolen goods, ironware, spirituous liquors, clothing, textiles, cigars, ships, and engines. It has an extensive import and export trade, especially in fish, cereals, live stock, and merchandise. The Trave River has been deepened so as to permit the largest vessels to reach the city, though its harbor properly is at Travemunde, sixteen miles down the river. Fully 98 per cent. of the people are Protestants. The Saxons founded Lübeck in 1143, and, on account of important privileges granted by the German emperors, it rose rapidly to commercial importance, being for many years at the head of the Hanseatic League. Frederick II. made it an imperial free city as early as 1226. The French captured it in 1806 and annexed it in 1810, but in 1813 it recovered independence, and is now a constituent part of Germany. Population, 1920, (city) 98,620; (state) 116,533.

LUBLIN (lyōō′blyĕn), a commercial city of Poland, capital of the government of Lublin, sixty miles southeast of Warsaw, on the Bistrzyca River. It has railroad facilities, good schools, and a large trade. The chief buildings include the Church of Saint Nicholas, the city hall, and several convents and monasteries. Among the manufactures are cotton and woolen goods, soap, machinery and hardware. It was captured by the Austrians in 1915. Population, 1922, 64,780.

LUCCA (lo͞ok'kȧ), a city of Italy, capital of a province of the same name, on a railway line, thirteen miles northeast of Pisa. In the surrounding country are fine farms and orchards, including plantations devoted to the culture of silk and olives. The manufactures include stucco, silk, musical instruments, and machinery. It has a large trade in silk goods, olive oil, fruits, and cereals. The city has several fine churches, among them the Cathedral of Saint Martin, begun in 1063, the Basilica San Ferdiano, and a number of fine educational institutions. The province of Lucca was made a principality by Napoleon, though it later passed to Spain, and in 1847 was ceded to Tuscany. Population, 1922, 76,109.

LUCERNE (lū'sẽrn), a deep-rooting perennial plant, cloverlike in appearance, cultivated extensively for fodder. It is native to the southern parts of Europe, but has been naturalized extensively in America and other grand divisions. The plant attains a height of from twelve to fourteen inches, growing quickly after being mown. It supplies forage early in the season, and is especially valuable in its ability to endure great droughts, causing it to be cultivated to a considerable extent in arid regions. See **Alfalfa.**

LUCERNE (lo͞o-sẽrn'), a city of Switzerland, capital of the canton of Lucerne, at the northwestern extremity of Lake Lucerne, on the Reuss River. It has good railroad connections, modern municipal facilities, and a number of excellent buildings. The chief buildings include the public library, the gymnasium, and the church known as Hofkircke. Among the manufactures are cotton, woolen, linen, and silk fabrics, gloves, carriages, musical instruments, and machinery. As a gathering place of summer visitors and tourists it takes high rank, owing largely to its interesting scenery, including the Lucerne Lion, a figure of a lion hewn in 1821 from the solid rock after a model furnished by Thorwaldsen. The Glacier Garden, a fine public resort, contains interesting formations caused by the action of ice, and in the vicinity are many scenic views in connection with the lake region. Population, 1920, 39,339.

LUCERNE, Lake of, frequently called Lake of the Four Forest Cantons, a lake of Switzerland, surrounded by the cantons of Unterwalden, Schwyz, Lucerne, and Uri. It is 1,400 feet above sea level. The shores are rocky and precipitous, the general form is irregular, and the scenery, as well as its historical associations, have been celebrated for many centuries. The length of the lake is about 22 miles, the breadth is two miles, and the area is 44 square miles. Steamboats navigate it, making it important commercially. On its shore are many harbors and beautiful villas. Near it are several important cities. Many of the early historical associations are connected with the name of William Tell. Many thousands of tourists visit Lake of Lucerne during the summer.

LUCIA (lo͞o'shȧ), **Saint,** an island of the West Indies, belonging to Great Britain. The area is 233 square miles. It has much fertility and exports cocoa, sugar, rum, and tropical fruits. Castries is the capital and chief town. Population, 1922, 54,073.

LUCIAN (lū'shạn), Greek author, born in Samosata, Syria, in 120 A. D.; died in Egypt about 198. He descended from poor parents, studied law and Greek letters, and traveled extensively in Italy, Greece, and Gaul. At Athens he became acquainted with the Attic dialect. It is thought that he wrote many of his satires while residing at Athens, but in the latter part of his life he served as procurator of part of Egypt under appointment of Emperor Commodus. His writings are humorous and satirical, considered by some critics as being of an impious nature, and give evidence of a powerful inventive fancy. The list of writings includes "Dialogues," "Criticisms," "Biographies," "Romances," "Poems," and rhetorical and miscellaneous works. His best known works are the so-called "Dialogues," which are devoted to the ridicule of philosophical sects and mythology, and embrace principally "Dialogues of the Gods and of the Dead," "Sale of Lives," "Above the Clouds," "True Histories," and "The Revivified."

LUCIFER (lū'sĭ-fẽr), an ancient name of Venus, applied when it was the morning star, as distinguished from Hesperus, the name given to it when it was an evening luminary. Early commentators mistook the reference made in Isaiah xiv., 12, to the kings of Babylon and ascribed the appellation to Satan. Lucifer is the name applied in Milton's "Paradise Lost" to the archangel who fell from divine favor and lowered a part of the host of heaven to the infernal regions.

LUCILIUS (lu̇-sĭl'ĭ-ŭs), **Gaius,** poet, born at Suessa Aurunca, Rome, in 148 B. C., died in 103 B. C. He was a granduncle of Pompey the Great and a friend of Scipio Africanus. In 136 he served under the latter at the siege of Numantia. Writers regard him the inventor of Roman satirical composition, and his writings had a marked influence over the expressions of Juvenal, Horace, and Persius. He is the author of a comedy, several hymns, and thirty satires, but only fragments of his writings are extant.

LUCKNOW (lŭk'nou), a city of British India, capital of the province of Oudh, on the Gumti River, 42 miles northeast of Cawnpore. It is surpassed in population only by Calcutta, Madras, and Bombay. Steamboats are able to reach the city by the Gumti River at all seasons. It has extensive railroad facilities, connecting it with all parts of India, and is the seat of a vast trade in farm produce and merchandise. The older part of the city has low houses constructed of mud and straw roofs. In the newer portions are many fine streets and numerous religious, educational, and government buildings. It is improved by many modern municipal facilities, such as telephones, waterworks, sewerage, and electric street railways. The early history is unknown, since it was founded at a very early date, probably before any of the other great cities of India. In 1857 it was the center of activities during the Sepoy mutiny and its garrison was besieged by a large army of natives. In making the defense Sir Henry Wallace was slain, General Havelock died of dysentery, and permanent relief was not secured until in 1858, when Sir Colin Campbell entered the city with an English force and put an end to the mutiny. Population, 1922, 274,356.

LUCRETIA (lu̇-krē′shĭ-ȧ), a Roman heroine, the wife of L. Tarquinius Collatinus. She was outraged by Sextus Tarquinius, a son of Tarquinius Surpebus, the King of Rome. After informing her husband and the household of her wrong, she stabbed herself and died. Through this circumstance the people became aroused against the Tarquins, who were expelled from the city, and the republic was established.

LUCRETIUS (lu̇-krē′shĭ-ŭs), **Titus Lucretius Carus,** Roman philosopher and poet, born about 95 B. C.; died in 52 B. C. His life is shrouded in tradition, but it is known that he was one of the most noted descriptive poets of Rome. His reputation rests largely on his celebrated work in six books, entitled "On the Nature of Things." It constitutes a philosophical didactic poem, was published about 56 B. C., and in it are explained the tenets of the writer in relation to morals, religion, and physical life. It was his ambition to destroy the superstition of his countrymen, and to direct their attention to the fixed laws that govern the universe and hold together all matter of which it is constituted. He called attention to his theories in public discourses, maintaining that the senses are the avenues by which knowledge is obtained, and that they constitute the most reliable means of testing truth. He contended that natural causes are the occasion of all phenomena, that superstition is but the outgrowth of ignorance and weakness, that the world was created from existing materials, and that its destruction is impossible, though its existing form may not endure. According to his view, the functions of the body include life and soul, both of which cease when the body perishes. His work is valuable as a production of art, but as a philosophical speculation it is rather vague than reliable. Many editions of the works of Lucretius have been published.

LUCULLUS (lu̇-kŭl′lŭs), **Lucius Lucinius,** distinguished naval and military commander of Rome, born about 110 B. C.; died about 56 B. C. In 77 B. C. he was praetor of the province of Africa, became consul the following year, and shortly after reaching Asia he defeated the King of Pontus, Mithridates, at Chalcedon. The entire regions of Pontus were subdued by the Romans in 71 B. C., and two years later Lucullus conquered Armenia, making its king, Tigranes, tributary to Rome. A mutiny was organized by Mithridates and Tigranes in the year 68 B. C., and, failing to subdue the rising forces, Lucullus was superseded by Pompey. He acquired a large fortune during his public life, much of which he spent in encouraging philosophers, poets, and artists, and he also established splendid gardens. His practice was such that he came to be spoken of as a lover of justice and humanity. During the time of his military power he bent every energy to overcome the evils of the first triumvirate, constituted of Crassus, Pompey, and Caesar.

LUDINGTON (lŭd′ĭng-tŭn), a city in Michigan, county seat of Mason County, on Lake Michigan, where it is entered by the Père Marquette River. It is on the Père Marquette and other railroads and has direct communication by steamboats with the principal ports on the Great Lakes. The surrounding country is rich in the production of fruits, salt, and lumber. Among the noteworthy buildings are the county courthouse, the high school, the public library, and many churches. The manufactures include ironware, bread, candy, cigars, lumber products, furniture, and machinery. The city has modern facilities, including electric lights, waterworks, and sewerage. It was settled in 1851 and incorporated in 1874. Population, 1920, 8,810.

LUDLOW (lŭd′lō), **William,** soldier, born at Islip, L. I., Nov. 27, 1843; died Aug. 30, 1901. He graduated at West Point in 1864 and served efficiently in the Federal army during the Civil War, taking part in the Atlantic campaign and in Sherman's march to the sea. Subsequent to the war, from 1872 until 1876, he was chief engineer of the department of Dakota, serving in the Black Hills and Yellowstone expeditions. In 1888-93 he had charge of river, harbor, and lighthouse work on the Great Lakes, and in the latter year became military attaché to the United States embassy at London. He was president of the Nicaraguan Canal Commission in 1895. At the beginning of the Spanish-American War he was made brigadier general of volunteers, commanding the right wing at Santiago, and in the latter part of 1898 was appointed military governor of Havana. In January, 1900, he was made brigadier general in the regular army and ordered to the Philippines, but ill health made it necessary for him to be relieved. Subsequently he made a study of technical military institutions in Germany and England with the view of formulating plans for a military college in the United States.

LUDWIG (lo͞ot′vĭg), **Alfred,** philologist, born in Vienna, Austria, in 1832; died in 1912. He studied courses at Vienna and Berlin, and in 1860 was made professor of philology at Prague, where he taught successfully a long term of years. Many of his writings have been translated, some of which are standard texts for the study of Sanskrit. Among his works are "Agglutination or Adaptation," "Critical Examination of the Rigveda in Texts," "Methods of Interpreting the Rigveda," and "Plato's Apology of Socrates."

LUDWIG I., or **Louis de Debonnaire,** born in 778; died on an island in the Rhine, near Mentz, June 20, 840. He was the son of Charlemagne, becoming his co-regent in 813, and in 814 succeeded him as Emperor of the West and King of the Franks. Being anxious to establish an order of succession, he declared his eldest son, Lothaire (796-855), his successor in 817, giving him the greater part of Germany. At the same time he placed his other sons, Pepin and Louis, in charge of vast dominions. Bernard, King of Italy, was dissatisfied with the partition and raised an insurrection, but he was soon overcome and his territory was annexed to that of Lothaire. In 829 he made a second division at the request of his second wife, Judith of Bavaria, on account of which her son received a representative share of the territory, but the three older sons refused to consent, and accordingly met their father in battle near Colmar in 833. The result proved unfavorable to Ludwig and he voluntarily abdicated. Pepin died in 838, when the principal part of the dominion fell to Charles and Lothaire. This circumstance caused the younger Louis, son of Ludwig's second wife, to object, but Ludwig died before the dispute was settled. Lothaire I. succeeded to the imperial title, but all the sons received dominions of more or less importance.

LUDWIG I., Karl August, King of Bavaria, born Aug. 25, 1786; died in 1868. He secured the advantages of a liberal education, was a devoted patron of science and fine arts, and on Oct. 13, 1825, succeeded to the throne. His reign was inaugurated by encouraging fine arts and erecting public buildings. In religious affairs he was partial to the Church of Rome. He gave support to the first railway built in Germany, a line from Fürth to Nuremberg, and constructed the Ludwigs Canal, which connects the Main and the Danube. The revolutionary movements in 1848 caused him to resign in favor of his son, Maximilian.

LUDWIGSHAFEN (lo͝ot'vĭgs-hä-fe̱n), a city of Germany, in the Rhine Palatinate, Bavaria. It is located on the Rhine, opposite Mannheim, with which it is connected by railway and electric lines. The harbor is extensive and well improved. It has manufactures of vinegar, flour, chemicals, fertilizers, and machinery. Formerly it was of little commercial importance, but the development of manufacturing enterprises has caused its rapid growth. It was founded by Louis I. of Bavaria in 1843, and was made a city in 1859. Population, 1920, 83,297.

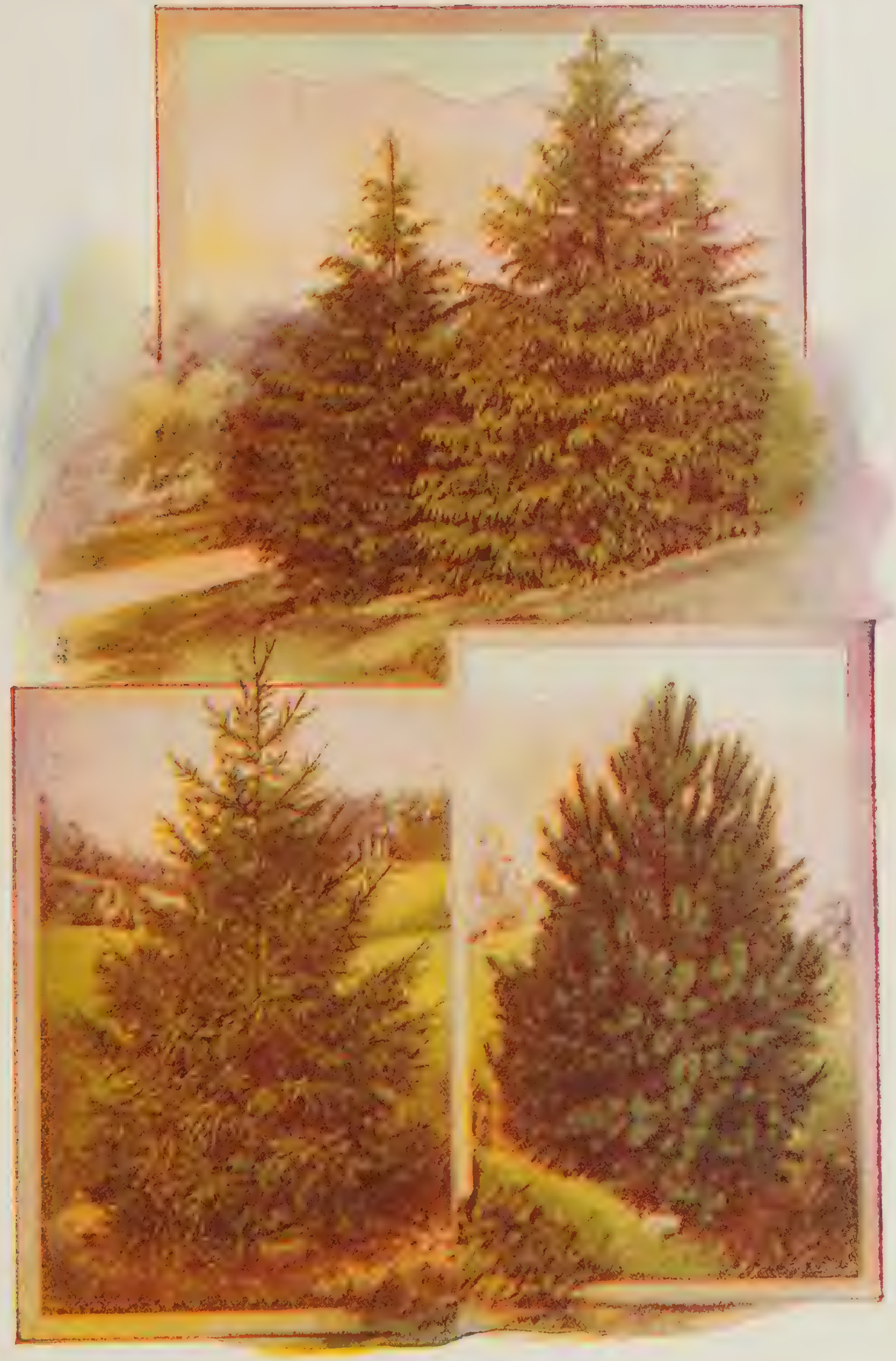
LUINI (lo͝o-ē'nē), or **Luvino, Bernardino,** eminent painter of Lombardy, born at Luino, Italy, in 1470; died about 1530. He is noted as one of the most celebrated artists of the Lombard school, his productions being characterized by poetic grace, excellent coloring, and great beauty. Among his pictures are several frescoes in oil, including "Saint John with the Lamb," "The Crucifixion," and "The Enthroned Madonna."

LUKE, Saint, a Christian evangelist, author of the third gospel and of the Acts of the Apostles. It is thought that he descended from a Hellenic Jew, was born at Antioch in Syria, and studied and taught medical science. The Scriptures refer to him as an associate of Paul, whom he accompanied in 52 A. D. on his second evangelistic expedition, and he himself states at the beginning of his gospel that his information came from those who were eyewitnesses and ministers of the Word from the beginning. From this is implied that he was not an eyewitness of the events, but that he recorded them from the narrations of those who were closely associated with Jesus and the disciples. It is not certain when he was converted, but it is thought that he was included with the seventy disciples who were sent forth by Jesus to preach, and that he was the person whose name is not mentioned in speaking of the Saviour's journey to Emmaus. In the Acts of the Apostles incidents are related to which he was an eyewitness while accompanying Paul in his travels. Jerome places his age at 84 years, but neither the time of his birth nor death is known. October 18 is generally celebrated as his festival.

LUMBAGO (lŭm-bā'gō), the form of rheumatism that affects the muscles of the loins. It sometimes extends to the ligaments underneath the muscles, and often occasions sudden and severe pain to the person afflicted.

LUMBER, the name applied to split or sawed timber, such as boards, beams, joists, planks, lath, and shingles. Usually logs and telegraph poles are included in the term lumber, and places where these products are kept for sale are known as lumber yards. Canada and the United States are at present the leading lumber-producing countries. Other countries where timber and lumber products are obtained in large quantities include France, Germany, Russia, China, India, and the equatorial regions of Africa.

Lumber has been an export of Canada since an early date in its history. It is said that the first shipload of lumber was transported from Canada to Europe in 1667, and shipbuilding began on a small scale about that time at Quebec. Stringent regulations were issued for the preservation of timber in Canada, and a large area of the forests are included in the Canadian timber preserves. It is estimated that 800,000,000 acres of woodland are in existence in that country, but probably not more than half of this area may be considered forest land fit for tim-



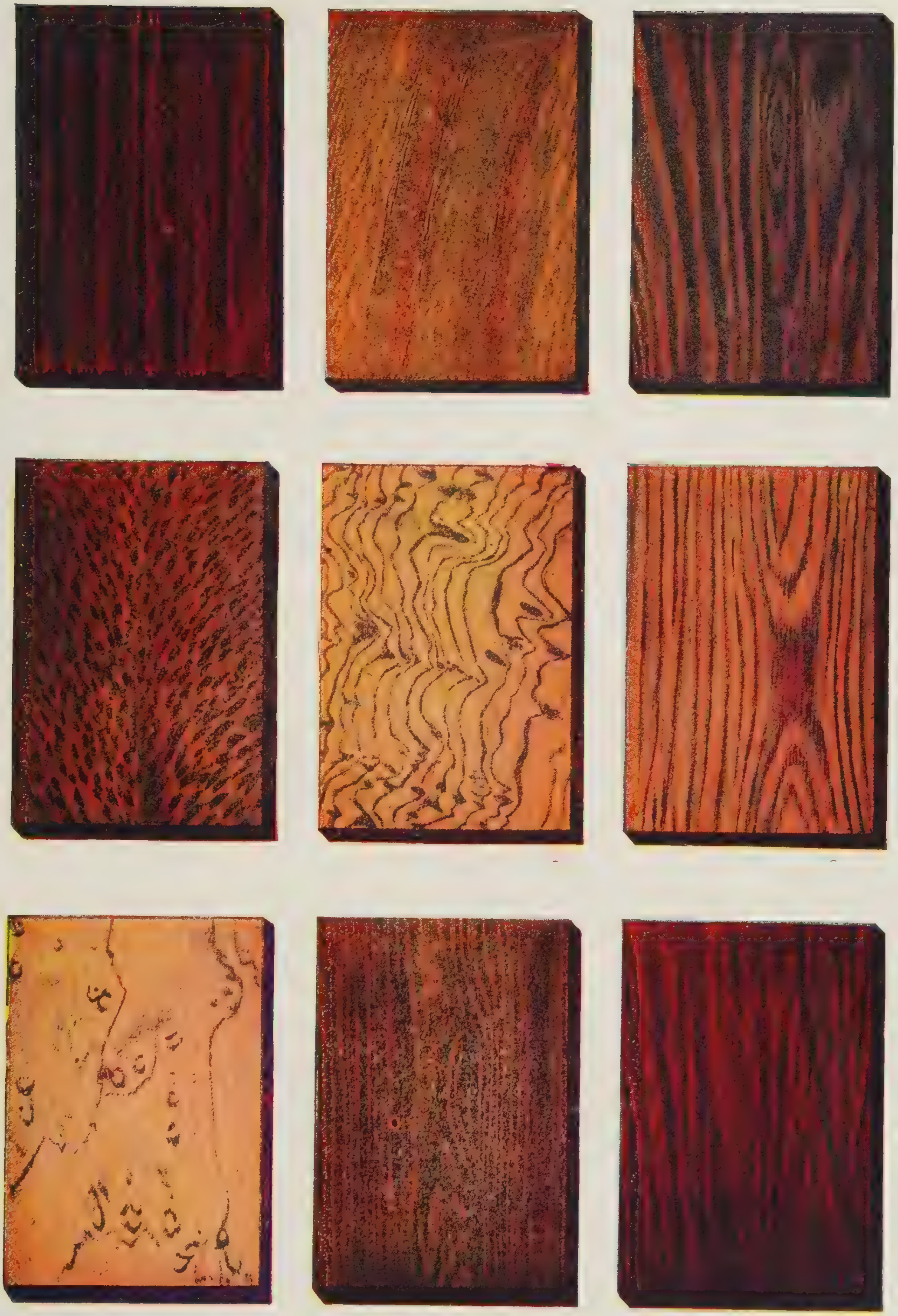
(Opp. 1644)

COMMON EVERGREEN TREES.

White Spruce.

Norway Spruce.

Scotch Pine.



(Opp. 1644)

POLISHED WOODS.

Coralwood.
Sycamore.
Bird's-Eye Maple.

New Guinea Wood.
Hungarian Ash.
Rosewood.

Kingwood.
Tulipwood.
Sandalwood.

ber production. The valuable forest lands are located in Quebec, Nova Scotia, New Brunswick, Ontario, British Columbia, and in a belt extending across the north of the continent from Labrador to Alaska. The value of the annual output in Canada is placed at $135,000,000.

Originally the United States had the largest and most valuable forest area of North America, and the value of the lumber produced at present is larger than that of any country in the world. Extensive forests extend through many of the states in the south, especially those bordering on the Mississippi. Another large forest area is located in the vicinity of the Great Lakes, in the states of Michigan, Wisconsin, and Minnesota, and productive lumber regions abound in Maine. Forests of more or less commercial value are found in all the highlands of the west, but those of largest size and greatest value are in Oregon, Washington, and the northern part of California. In the value of the output the lumber industry takes rank as the fourth enterprise in the United States. The annual production has a value of $565,500,000. In recent years the tendency has been for lumber products to increase in value, owing to the supply becoming more limited, or the larger tracts of timber being purchased by large investors. There has been a constant increase in the importation of wood and its products from Canada, which average annually about $25,500,000. See **Forest.**

LUMPFISH, or **Lumpsucker,** a fish found in the Atlantic Ocean, chiefly along the coast northward from New York in America and from France in Europe. It is so named from its awkward shape. The back is characterized by an elevated ridge, which is notched quite like the comb of a cock. Bony tubercles cover the body and the ventral fins are formed into a sucker, enabling it to cling firmly to any solid substance. The color becomes brilliant crimson at the spawning season, though usually it is of a dull lead color. The lumpfish deposits its eggs in an improvised nest and hovers near to protect them against enemies. It is caught for its flesh, though it is quite soft and oily and not highly esteemed.

LUMP JAW, or **Lumpy Jaw,** a dangerous disease of cattle, due to fungi found on grasses and some of the cereals. It usually makes its appearance on the lower jaw, which is affected more or less by swellings, though other parts of the body are sometimes the seat of the disease. A single fungus may penetrate the gums and cause the disease, which is attended by irritation, abnormal growths, and tumors or abscesses. Lancing or removing the tumors at an early stage and treating the seat of the disease with iodine and iodide of potash constitute the usual remedies, but unless skillful treatment is applied the disease is usually fatal.

LUNA (lū'nȧ), in Roman mythology, the goddess of the moon. She corresponded to the Selene of the Greeks. It is said that Romulus introduced her worship among the Romans. Three celebrated temples were built in her honor at Rome, those on the Aventine, on the Palatine, and near the Circus Maximus.

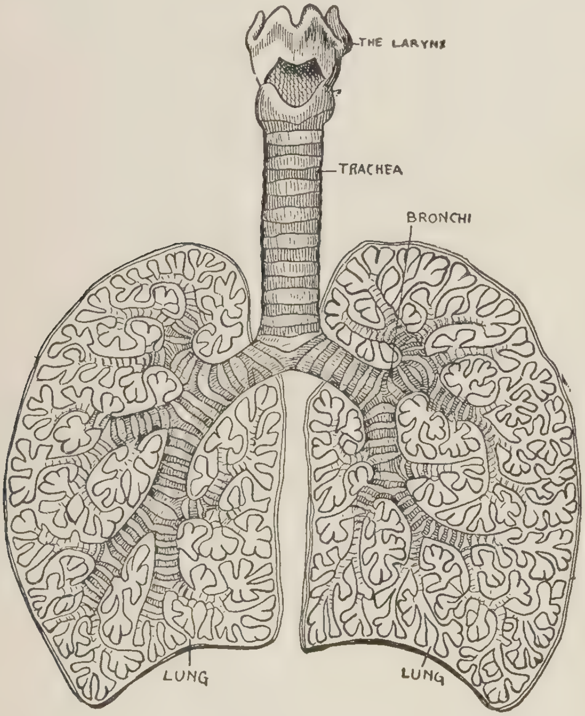
LUNACY (lū'nȧ-sȳ), a term applied to persons born sane, but who have from some cause fallen into temporary or permanent aberration of intellect. Lunatics possess a brain of so little circumference that they are never capable of exercising much reason. Lunacy is distinguished from idiocy in that the latter is a designation of persons born with unsoundness of mind. See **Insanity.**

LUNAR THEORY, the deduction of the moon's motion from the law of gravitation, manifested in the attraction of the sun and planets. None of the heavenly bodies, except the sun, disturbs the moon to a considerable extent in its orbit. However, they affect the earth in this respect, and so in an indirect way influence the moon.

LUNDY (lŭn'dĭ), **Benjamin,** abolitionist, born in Hardwick, N. J., Jan. 4, 1789; died Oct. 22, 1839. He descended from a Quaker family and in 1808 removed to Ohio. In 1815 he organized an Anti-Slavery Society at Saint Calairsville, Ohio, and soon after began the publication of the *Genius of Universal Emancipation,* a monthly periodical. Later he joined William Lloyd Garrison in editing antislavery literature. In 1836 he founded the *National Inquirer* in Philadelphia, Pa., and in the meantime made a number of lecturing tours in the interest of emancipating the slaves. Several times his property interests were destroyed and he was assaulted by those opposed to his views.

LUNDY'S LANE, the seat of an important battle near Niagara Falls, in Canada, fought in the War of 1812. The British had been defeated at Chippewa and General Drummond was sent forward to meet the Americans under Gen. Jacob Brown, but the latter dispatched General Scott to menace the forts on the Niagara River. On July 24, 1814, General Scott came in contact with the British forces under General Riall on a hill near Lundy's Lane, and sent Major Jesup forward to make a flank movement at the British rear, while Scott engaged the enemy. Action continued from the middle of the afternoon until midnight, the British troops being repulsed early in the engagement, but the American generals, Scott and Brown, were wounded, when the command devolved upon General Ripley. The latter withdrew from the field, and it was again possessed by the British on the following day. The Americans lost 850 men, while the British loss was near 900.

LUNGS, the organs for aërial respiration, situated in the thorax, on each side of the heart. In man the lungs are conical, with the base resting on the diaphragm and the trachea extending above the collar bone. They consist of two lobes, separated by a deep fissure, the right being somewhat larger on account of having a third lobe of triangular shape above and also because the heart lies toward the left side. The lungs are composed of honeycomblike cells to which air passes by means of the bronchial tubes, these being formed by divisions of the trachea, and at the upper part of the trachea is the larynx. Within the lungs are ramifications of the pulmonary artery and veins, bronchial arteries and veins, lymphatics, and nerves, the whole being bound together by fibrous tissue. Each lung is enclosed in a serous membrane, the pleura, which extends to its roots, and is then expanded on the chest wall. All mammals, reptiles, birds, and some amphibians possess lungs, while in the lowest and simplest forms of animal life there are no traces of respiratory organs, equivalent action taking place by cilia or by the general movement of the body. Most mollusks possess gills in the place of lungs. Fishes sustain life by gills, though many have an air bladder. Animals which approach the reptiles in form have a well-developed sac, in many of which it takes on a double form analogous to the double lung.



HUMAN LUNGS.

The important function of the lungs is to bring the blood in contact with the air for the purpose of purifying it. In this process the air gives up its oxygen to the blood in the delicate cells in the lungs, and in turn receives water and carbonic acid gas that have become foul with waste matter, accumulated by the blood in circulating through the body. The air exhaled carries off these impurities, while the purified blood bounds through the system and carries the inspiring oxygen to the different organs. Several acute and chronic diseases affect the lungs, among them pneumonia, a form of inflammation, and consumption. See **Respiration; Circulation.**

LUNGWORT (lŭng'wôrt), the name of a herb native to Europe and North America. It is cultivated for its tubular or trumpet-shaped flowers. The leaves are ovate and the flowers have a bright blue color. The name is likewise applied to a lichen of the Northern Hemisphere, which is used to some extent in treating diseases of the lungs.

LUPERCALIA (lū-pẽr-kā'lĭ-ȧ), a festival of ancient Rome, celebrated annually on Feb. 15 in honor of Lupercus, the god of fertility. It is related that the festival was celebrated at the Lupercal, a cave on the Palatine Hill, and that sacrifices of the first fruits of the last harvest were offered. Later the sacrifices consisted of goats, and two youths, known as the *Luperci,* clothed in goat skins, ran through the streets, striking those they met with thongs made of the skins of the slaughtered animals. These ceremonies were supposed to induce fertility.

LURAY (lů-rā'), a town and the county seat of Page County, Virginia, in a fertile valley of the South Fork of the Shenandoah, 77 miles west of Washington. It has woolen factories, mills, a tannery, an academy, and two seminaries. Near it is the celebrated Luray Cave, remarkable for its peculiar stalactites, many of which are fifty feet long. Hundreds of lakes are in the cave, varying in size from a few to fifty feet in diameter, and from six to fifteen feet in depth. The exact size of the cave is not known, but there are various chambers of large size and irregular outline, many of them having a height of 260 feet. It has a temperature of about 54° Fahr. The air is pure and portions are lighted by electricity, thus forming a favorite attraction for thousands of visitors annually. The population of Luray, in 1900, was 1,147; in 1920, 1,381.

LUTE, a stringed musical instrument which somewhat resembles a guitar. Formerly it was popular throughout Europe. It was introduced into Western Europe by the Arabians, who used it in the performance of solos and duets and for accompaniments. Its antiquity is attested by representations on Egyptian tombs and sculpture. Originally the lute had five or six pairs of strings, each pair tuned in unison or octave, but later the strings were increased to 24 in order to accommodate the lute to the chromatic scale. The music is produced by striking the strings with the fingers of the right hand and stopping them on the frets with those of the left.

LUTHER (lo͞o'thẽr), **Martin,** the most eminent Protestant reformer, born at Eisleben, Germany, Nov. 10, 1483; died there Feb. 18. 1546. He descended from a family of free peasants, was the son of Hans Luther and Margaret Lindeburn, and secured his elementary education at Magdeburg and Eisenach. While attending school in the latter town, he attracted the notice of a lady named Ursula Cotta, wife of the burgomaster, who gave him motherly care and a comfortable home. In 1501 he entered the University of Erfurt, where he studied classics and philosophy, and secured a master's degree in 1505. While at Erfurt he was impressed by examining the Vulgate translation of the Bible in the university library. After studying and comparing it carefully with lexicons, he resolved to devote himself to a spiritual life, and soon after entered the Augustine Convent at Erfurt. There he remained three years studying the Bible, and formed the doctrinal convictions which afterward strengthened him in his struggle against the Papacy.

MARTIN LUTHER.

Luther was ordained a priest in the Roman Catholic Church in 1507, became teacher in the University of Wittenberg, founded by the elector of Frederick of Saxony, and became a bachelor of theology in 1509, at which time he began to lecture and discourse on the Scriptures. The sermons he preached were so powerful that they awakened much enthusiasm, and of them Melanchthon said they were "born not on his lips, but in his soul." In 1510 he proceeded on a mission to Rome on business with Pope Leo X., but had no open controversy with the Catholic Church until John Tetzel came to Wittenberg, in 1517, for the purpose of selling indulgences for the commitment of sins. This course caused him to prepare 95 propositions, or theses, in opposition to the doctrine of indulgence, which he nailed to the door of the church at Wittenberg, and proposed to defend them in the university. The theses denied the Pope all right to forgive sins, and maintained that papal absolution has no value in and of itself. The bold position taken by Luther caused Tetzel to flee, and a great wave of religious commotion spread over Germany.

All efforts to cause Luther to retract were of no avail. He refused to proceed to Rome on a summons, and gave no heed to the entreaties of Cardinal Cajetan for a reconciliation. In 1519 he entered a public disputation with Dr. Eck, and the next year publicly burned a bull of anathema sent by the Pope to Wittenberg. Being called upon to vindicate his conduct, he issued his famous address to the "Christian Nobles of Germany," and many of the most powerful immediately rallied to his support. Charles V. became Emperor of Germany at that time, and convened his first diet of sovereigns at Worms in 1521, to which Luther was summoned with the view that he would recant. He at once made known his readiness to appear before the diet. His journey resembled a march of triumph, friends rallying to his support and enemies threatening him. He declared his readiness to appear at Worms even though as many devils confronted him as there were tiles on the roofs of the city. At the diet he acknowledged his writings, but refused to retract unless convinced by Scripture and reason, declaring it unsafe and unjust for man to stand against conscience. The closing words of his masterful plea were, "There I take my stand; I can do no otherwise; so help me, God." Those in authority placed him under the ban of the empire, but permitted him to leave Worms in safety, and, while near Eisenach, he was taken to the Castle of Wartburg, where he was secluded about a year and devoted his time to translating the New Testament into the German.

The fires of the Reformation were kindling with rapidity, and soon after he left for Wittenberg, where he counseled peace and solicited moderation on the part of the princes and nobles. In 1525 he and Erasmus differed on several Christian tenets, which resulted in the publication of a number of treatises. In the same year Luther laid aside the priestly robe of the Roman Church and married Catherina von Bora, a nun, who, with several others, had renounced Catholicism under Luther's teachings. The work of translating the Bible into the German was completed by the aid of Melanchthon and others in 1534, and the Confession of Augsburg was made in 1530, two works of importance. The former was the means of unifying and extending the German language, while the latter established the Protestant faith in Germany and many other countries of Europe. Luther was a thoroughly practical man, in whom were combined rare humor, tenderness, and poetic sensibility. Surpassed by Melanchthon in judgment and by Calvin in learning, he was yet a reformer rarely equaled in power of discourse and religious zeal. The writings of Luther are very numerous, and include sermons, treatises on the Scriptures, songs, letters, and table talks. His best known song is "A Mighty Fortress is Our God."

LUTHERANS (lū'thẽr-ạnz), a body of Christians that adopted the principles of Martin Luther, and who constitute numerically the largest Protestant organization in the world. The two principal branches are designated as Evangelical and Reformed, the former holding closely to the teachings of Luther, while the latter constitutes a branch separated from the main body under Calvin. The largest number of adherents to Lutheran tenets are in Germany, Sweden, the United States, Holland, Switzerland, Austria, Norway, Denmark, and Russia, but there are branch organizations in all parts of the civilized world. The first Lutheran immigrants to America came from Holland and settled at New Amsterdam in 1624. Large numbers came from Sweden in 1637, from Germany in 1680, and Switzerland in 1734. In 1917 there were 965 ministers and 235,500 communicants of the Lutheran Church in Canada. In the same year the denomination had 9,348 churches and 2,460,380 communicants in the United States, while all of the Lutheran population, including several allied branches, was 6,842,590. They maintain 120 institutions of higher learning, support extensive missionary operations, and are grouped in sixteen independent synods. Among the important societies are the Luther League, Women's Societies, Walther League, and Christian Endeavor Associations. The chief Lutheran institutions in America are in Saint Louis, Mo., Fort Wayne, Ind., Springfield, Ill., Saint Paul, Minn., Milwaukee, Wis., and Neperan, N. Y.

LÜTZEN (lü'tsen), a town of Germany, in Prussian Saxony, celebrated because of two historic battles fought within its proximity. The first was between the Swedes under Gustavus Adolphus and the imperialists under Wallenstein in 1632, in which the former were victorious. The other occurred between the allied German and Russian forces against Napoleon on May 2, 1813, in which the victory was claimed on both sides. In this battle the French lost 12,000 men and the allies lost 10,000.

LUXEMBOURG (luks-än-bōōr'), the name of a celebrated palace in the southern part of Paris, in the Rue de Vaugirard. It was built for Maria de' Medici in the early part of the 17th century and was designed to resemble her former home in Florence, the Pitti Palace. Subsequently it was greatly changed and enlarged, was destroyed by fire in 1859, and later was rebuilt. In 1879 it was made the meeting place of the Senate of France, though formerly it contained a famous picture gallery. The latter was removed to a neighboring building. It includes 24 scenes in the life of Maria de' Medici painted by Rubens. The collection is known as the Musee du Luxembourg and is considered the most important accumulation of sculptures and paintings in the world. The walls of Luxembourg Palace are beautified by fine ceiling decorations. The gardens of the Luxembourg, noted as the most beautiful in France, comprise a large public park.

LUXEMBURG (lŭks'ĕm-bûrg), a grand duchy of Europe, surrounded by Germany, France, and Belgium. It was under the sovereignty of King William III. of Holland until his death in 1890, when it passed to Adolph, Duke of Nassau. Charlotte, born in 1896, became grand duchess in 1919. The area is 998 square miles. Luxemberg is the capital, a city of 51,225 inhabitants. Most of the drainage is by a number of streams into the Moselle. The government is constitutional, the ruler being assisted by a chamber of deputies of 48 members, who are chosen by direct vote. It remained neutral throughout the Great European War. The language is German and the religion is largely Catholic. Population, 1922, 268,453.

LUZON (lōō-zŏn'), the largest and most northerly island of the Philippines. The area, including several dependent islands, is 44,235 square miles. It has a fertile soil, vast forests of valuable timber, and a number of mountain ranges. Mount Mayón, the highest peak, has an altitude of 7,566 feet. The general contour is very irregular, especially in the southern part, which has many important bays and excellent harbors. Among the principal lakes are Laguna Bay and Laguna de Taal, both in the southern part of the island. The chief streams are the Pampanga, Agno, Abra, Cagayan, and Pasig rivers. It has extensive productions of manila hemp, rice, sugar, tobacco, ginger, coffee, pepper, and many varieties of fruits. The domestic animals include cattle, horses, buffalo, sheep, and swine. Several railway lines are operated, connecting Manila, the capital, with interior and coast points. In 1922, the population, including several adjacent islands, was 3,798,507. See **Philippines.**

LYCEUM (lī-sē'ŭm), the principal gymnasium of Athens, dedicated to Apollo Lyceus, whence its name. It was situated in the eastern part of the city and was surrounded with lofty plane trees. Aristotle and his disciples taught in the Lyceum, who, from their habit of walking while delivering their lectures, were called *Peripatetics.* In modern times the name lyceum came to be applied to schools for young men and to organizations which maintain popular or technical lecture courses.

LYCIA (lĭsh'ĭ-ȧ), an ancient country of Asia Minor, located south of Phrygia and west of Pamphylia. The region was colonized at an early period by the Greeks, who long maintained the independence of their territory. They formed a league of cities, including Patara, Xanthus, Myra, and Olympus. In the 6th century B. C. the Lycians were conquered by Persia and subsequently passed under the dominion of Macedonia. Later the country belonged to Egypt, Syria, Rome, and Turkey, and throughout the early history of Christianity it had no importance.

LYCURGUS (lī-kûr'gŭs), a celebrated lawgiver of Sparta, son of King Eunomus. According to Herodotus he flourished about 890

B. C. He was an uncle of Charilaus, who became king in his infancy, under the guardianship of Lycurgus. When his nephew became of age, Lycurgus went upon an extended tour through Crete, Asia Minor, Libya, Egypt, India, and Iberia for the purpose of examining political institutions and studying economic conditions. On his return to Sparta he became recognized as an efficient lawgiver, writing for the Spartans a new constitution. His constitution was designed for the purpose of establishing the Spartan government as a powerful nation, one in which the public good should be the highest concern of legislators and private interests were to be subservient to it. After adopting the constitution, he required the Spartans to vow that it would not be changed until his return from a second journey, hoping thereby to make it perpetual and to overcome any possibility of its early repeal. It is recorded in history that he never returned, but Lucian furnishes good evidences that he retired from public life and died at the age of 85 years. The Spartans held Lycurgus in high esteem and perpetuated his memory by the erection of a temple and the offering of annual sacrifices.

LYDDITE (lĭd'īt), a modern high explosive, so named from its manufacture at Lydd, Wales, where the first experiments were made with it. The first use of lyddite in warfare was by the British in the war with the Boers in 1899-1901. Its method of manufacture has been kept a secret, but it is thought to consist of picric acid brought to a dense form by fusion and poured into shells in a liquid state. Though formerly restricted in use to five-inch howitzer guns, it is now employed in the larger fort and naval ordnance. When fired, the picric acid causes a dense fume of yellowish-green gas, and it is somewhat objectionable on account of requiring a primer.

LYDEKKER, Richard, naturalist, born in England in 1849. He studied at Trinity College, Cambridge, where he graduated in 1871, and shortly after was made a member of the geological survey of India, where he served continuously until 1882. Two years later he undertook to catalogue the collection of fossil mammalia, reptilia, birds, and amphibia in the British museum. He visited Argentina in 1893 to study the collection of fossils in the La Plata museum, enabling him to give to science much valuable information regarding rare specimens. He was elected a member of many British and foreign societies. His published works include "Royal Natural History," "Catalogue of the Remains of Pleistocene and Prehistoric Vertebrata in the Geological Department of the Indian Museum," "Deer of All Lands," "A History of the Family Cervidae, Living and Extinct," and "Wild Oxen, Sheep, and Goats of All Lands, Living and Extinct." He died April 19, 1915.

LYDIA (lĭd'ĭ-ȧ), an ancient country of Asia Minor, surrounded by Phrygia, Mysia, Ionia, and Caria, originally inhabited by a people called Maeonians. About 720 B. C. the Lydians occupied the country and developed a large interior commerce. Their greatest prosperity was reached in the period included between the years 716 B. C. and 546 B. C., but their king, Croesus, was conquered in the latter year by Cyrus of Persia. It is claimed that the Lydians were the inventors of musical instruments, of the art of coining money, and of wool dyeing, and that they discovered the art of working in ore. Sardis was the capital and after the Persian invasion became the seat of government of the western part of the empire, remaining such until its conquest by the Athenians.

LYELL (lī'ĕl), **Sir Charles,** geologist, born at Kinnordy, England, Nov. 14, 1797; died Feb. 22, 1875. He was the eldest son of Charles Lyell and studied at Midhurst and Exeter College, Oxford, graduating from the latter in 1819. Subsequently he studied law, but soon became devoted to the sciences, to which he gave many years of research. In 1824 he made a tour of Europe to study geology and subsequently traveled in other continents, visiting the United States and other American countries. His "Principles of Geology" was published in 1830. He became professor of geology at King's College in 1832, was president of the Geological Society in 1836, and about the same time received a degree from Cambridge. He was made a baronet in 1864. His principal writings include "Elements of Geology," "The Antiquity of Man," "The First and Second Visits to North America," and "Transactions of the Geological Society." He promulgated the view that the antiquity of man is much greater than was formerly believed, supported the doctrine of evolution, and molded a decided taste favorable to scientific research.

LYMPH (lĭmf), a colorless fluid found in the lymphatic vessels. It is nearly transparent, has a saltish taste, and may be said to be blood with a somewhat different kind of corpuscles. See **Lymphatic System.**

LYMPHATIC SYSTEM (lĭm-făt'ĭk), the system in animals that absorbs lymph from the various organs and tissues, and conveys it by the lymphatic vessels toward the heart. It includes the lymphatic vessels, the glands, and the lacteals. The *lymphatic vessels* are delicate tubes of nearly uniform size, have a knotty appearance, and occur in every texture and organ of the body. The *lymphatic glands* vary in size from a hemp seed to an almond, are round and oval in form, and are made up of adenoid tissue. They occur in the course of the lymphatic vessels and the lacteals, and may be noticed particularly near the large blood vessels, in the armpits, and in the neck. The lymph is a clear, colorless, alkaline fluid, consisting of a plasma the same as that of the blood, and of corpuscles like the white blood corpuscles, but the coloring matter of the blood is wanting. After being absorbed from the different tissues and organs, it is conducted to the general blood current. The lymphatics of the right thorax, the right arm, and the right side and neck convey their contents to the right lymphatic duct, and those of the rest of the body into the thoracic duct.

The *lacteals* serve to absorb chyle from the small intestines, which is elaborated in the lymphatic glands, and afterward carried to the thoracic duct. The important function of the system is to retain and elaborate portions of the waste matter of the body and render them suitable for further use. They likewise absorb the poison of disease and produce the phenomena of absorption of the skin. After an excess of matter is deposited to fill up a breach in the body, as in an open wound, it is removed to other parts of the body by the lymphatics. Hibernating animals are supported during the winter by the fat which the absorbents carry into the circulation from the extra supply accumulated during the summer. In sickness a man unconsciously consumes his own flesh through the activity of the lymphatics.

LYNCHBURG (lĭnch'bûrg), a city of Virginia, in Campbell County, on the James River, 123 miles west of Richmond. It is on the Southern, the Norfolk and Western, and the Chesapeake and Ohio railroads, and is surrounded by a fertile farming country. Among the noteworthy buildings are the public library, the high school, the Miller Female Orphan Asylum, and the Randolph Macon Women's College. It has manufactures of furniture, tobacco, ironware, flour, lumber products, machinery, cotton goods, and utensils. Extensive stone quarries and iron and coal mines are worked in the vicinity. It has systems of pavements, waterworks, sewerage, and electric street railways. An abundance of water power for manufacturing is obtained from the river. It was settled in 1786 and incorporated in 1823. Population, 1900, 18,891; in 1920, 29,956.

LYNCH LAW, the summary infliction of punishment by an informal and self-appointed body of men, who act as an extemporized court. It is used to designate such punishment either with no trial at all or after trial by a court of law. The term is thought to have originated from James Lynch, mayor of Galway, Ireland, who sentenced his son to death for murder about 1526, and to prevent a rescue by a band of men executed him by his own hands without due process of law. The term became of common application in the United States from a Virginia planter named Charles Lynch, who acted with a number of associates to punish summarily Tories and British sympathizers. Lynch-law executions in the United States are about twice as numerous as legal ones.

LYNDHURST (lĭnd'hûrst), **John Singleton Copley,** lawyer and statesman, born in Boston, Mass., May 21, 1772; died in London, Oct. 12, 1863. He was the son of J. S. Copley, who removed from Boston to London in 1775, and gave his son a liberal education at Chiswick and Cambridge. The latter was called to the bar in 1804, built up an extensive practice, and entered Parliament in 1818. Subsequently he was solicitor-general, later was attorney-general, and in 1831 became lord chief baron of the exchequer. He was chosen lord chancellor for a third time in 1841, a position he held until 1846, when the Peel administration was defeated. Lyndhurst was not only an able jurist, but possessed recognized ability as an orator and diplomatist. His last speech in the House of Lords was delivered at the age of 89 years.

LYNN (lĭn), a city of Massachusetts, in Essex County, on Massachusetts Bay, ten miles northeast of Boston. It is on the Boston and Maine and a number of urban and interurban railroads. The harbor is comparatively shallow, but it has a shore line of three miles. The chief buildings include the public library, the city hall, the Lynn Home for Aged Women, the Lynn Hospital, and many schools and churches. Forest Park, Lynn Beach, and a soldiers' monument are other features. Lynn is noted particularly for the extensive output of boots and shoes. Other manufactures include electrical apparatus, clothing, machinery, agricultural implements, ironware, and fabrics. The city has all modern municipal facilities, including an extensive electric street railway system, waterworks, sewerage, and stone and macadam pavements. It was first settled in 1629, when it was known as Saugus, and the present name was adopted in 1637. Population, 1905, 77,025; in 1925, 103,081.

LYNX (lĭnks), a mammal of the cat family. It is characteried by ears that are tufted at the tips, a short tail, long fur, and comparatively long limbs. The name is given to several species of animals, most of which are larger than the true cats. They are light brown in color, with spots of black, and are fierce and savage in preying upon poultry, sheep, and other quadrupeds. In the common lynx the body is nearly three feet long and about twenty inches high at the shoulders, and the weight is from sixteen to

LYNX.

twenty pounds. The eyes are brilliant and the sight is keen, enabling them to lurk about safely at night. Lynxes are found in America, Europe, and in other grand divisions. Several species are utilized in hunting, for which purpose they are domesticated.

LYON (lī'ŭn), **Mary,** educator, born in Buckland, Mass., Feb. 28, 1797; died at South Hadley, Mass., March 5, 1849. She possessed remarkable natural ability, acquired a good education by consecutive application, and devoted herself to teaching from 1814 to 1837. In the latter year she founded Mount Holyoke Female Seminary, at South Hadley, Mass., and served as its principal until her death. In this establishment there were no servants, the domestic duties being discharged by students, thus paving the way for the organization of many institutions of a similar character. Her writings include "Missionary Offering" and "Principles and System of the Mount Holyoke Seminary."

LYON, Nathaniel, soldier, born in Ashford, Conn., July 14, 1818; slain in battle Aug. 10, 1861. In 1841 he completed the course at the United States Military Academy, West Point, served in Florida during the Seminole War, and rendered efficient service in the war with Mexico, being brevetted as captain after the siege at Vera Cruz. In 1851 he served in California, where he was promoted captain, and in 1861 entered the Civil War as a Unionist. He had charge of the German troops that captured Camp Jackson, because of which he became brigadier general, and in the same year attained success at Potosi, Dry Springs, and Wilson's Creek, in Missouri. In the last mentioned engagement his horse was shot from under him and he was mortally wounded. Lyon was a stern defender of the Union, and bequeathed his whole fortune, amounting to about $30,000, to the United States government. His letters to political friends in relation to the Kansas troubles were published in a volume entitled "Last Political Writings of Nathaniel Lyon."

LYONS (lē-ôn'), the third largest city of France, on the confluence of the Saône and Rhone Rivers, in the department of the Rhone, 240 miles southeast of Paris. The rivers divide the city into three parts, which are connected by many stone and steel bridges. It is noted as a railroad center, has a good river port, and is the center of a large commerce. The municipal facilities are modern, including electric street railways, several parks, city waterworks, and a fine public library of 125,000 volumes. It is strongly fortified. A system of canals connects it with various trade centers. The manufactures consist chiefly of cotton, woolen, and silk goods, drugs, hats, jewelry, lace, machinery, earthenware, furniture, tobacco, and spirituous liquors.

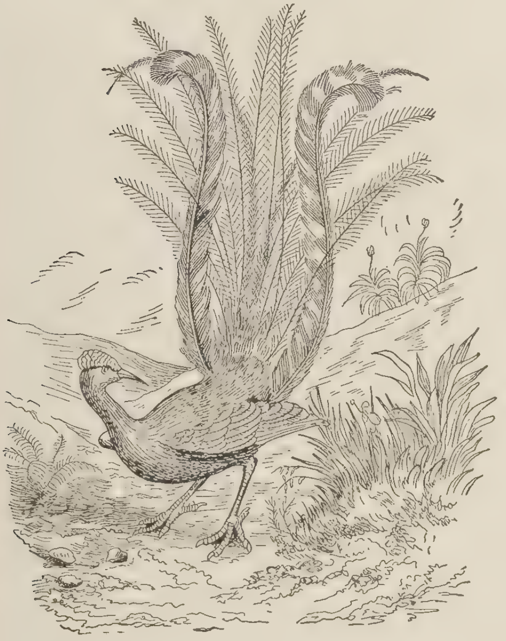
Lyons is generally well built and has broad and well-paved streets. Electric street railways furnish intercommunication. The noteworthy buildings include the Cathedral of Saint Jean, the Hôtel-de-Ville, the Church of Notre Dame, the Palais des Arts, the Grand Théatre, the Church of Saint Martin, the Gothic Church of Saint Nizier, and the Palais de Justice. The University of Lyons, with an attendance of 2,650, ranks next to that of Paris. Lyons was founded in the year 43 B. C. by the Romans. It became the capital of a Roman province about the beginning of the Christian era, and in the Revolution of 1789 was enthusiastic in the common cause, but suffered greatly during the conflict. It is noted as one of the fashionable centers of France. Population, 1921, 523,796.

LYONS (lī'ŭnz), **Edmund, Lord,** admiral, born in Burton, England, Nov. 21, 1790; died Nov. 23, 1858. He descended from a noted family, entered the navy as a midshipman, and won distinction by efficient service in the East Indies in 1810. In 1814 he became post-captain and was knighted in 1835. He was promoted to the rank of admiral in 1855 and the following year became a peer, being titled as Lord Lyons of Christ Church. His most distinguished services were against the Russians in 1853 on the Black Sea and while he commanded the ship *Agamemnon* during the bombardment of Sebastopol in 1854.

LYONS (lē-ôn'), **Gulf of,** a bay on the southeastern coast of France. It receives the water from the Herault, Rhone, and Aude rivers. On its shore are many ports, including those of Marseilles, Toulon, and Cette. It is the seat of an active commerce. Gales are not uncommon and, owing to their fury, it is said to have been named from the lion.

LYRE (līr), a stringed instrument of the harp class. It has been used from remote time. The invention of the lyre is ascribed to the Grecian Hermes, who is spoken of by Homer in that regard, and he is credited with giving it to Apollo, who was the first to play upon it with method as an accompaniment to poetry. The lyre was used by the early Assyrians, Babylonians, Egyptians, and Semitics. At first this instrument had three strings, but the number was increased to seven, later to eleven, and finally to sixteen. This became necessary as the number of sounds cannot be greater than the number of strings. In playing the performer uses a lyre stick of polished wood or ivory, though some operate solely with the finger. The instrument has two hornlike pieces, with a crossbar at the upper ends, from which the strings are stretched to the lower parts. As a means of increasing the sound, the principal portions of the lyre are hollow. In modern times the lyre has gone largely out of use, but is still employed by pastoral people of Europe, Asia, and Africa. Lyric poetry was so named from the lyre, since it is the instrument used early as an accompaniment to that class of poetry.

LYRE BIRD, a genus of birds common to Australia and New South Wales. The body is not as large as that of a pheasant. It has a brownish-black color above and is grayish-brown below. The male is remarkable for having sixteen tail feathers arranged in a lyre-shaped form, whence the name. Lyre birds are shy and solitary, running rapidly at the approach of danger, and are the largest of all song birds. They are noted for their peculiar ability to imitate the sounds of animals and the voices of other songsters. They are fast decreasing in number and their acclimation in countries foreign to their nativity thus far has failed. The eggs are two in number. Lyre birds feed on worms, beetles, and bugs, for which they scratch in the ground. Only three species are included in the genus, of which the *common lyre bird* and the *rasorial lyre bird* are the best known.



LYRE BIRD.

LYRIC POETRY (lĭr'ĭk), a term which was originally applied to poems intended to be sung to the accompaniment of the lyre or harp, but now used to designate that form of poetry whose object is to give expression of thought as influenced by emotion. Among the various forms of lyric poetry are the sonnet and elegy, now not set to music, and the song, hymn, ode, and psalm, which imply a musical setting. Lyric is distinguished from epic poetry in that action is essential to the latter.

Lyric poetry may be said to have originated before the time of Christ. It inspired the Greeks and Spartans to march to battle, engaged the ingenuity of Horace and Ovid, and was an element of inspiration to the shepherds of the Middle Ages. The patriotic songs and love poems of Walther von der Vogelweide gave way in Germany to the purely lyric poems of the 14th century. Among the famous English lyrics are Shelley's "Clouds," Milton's "L'Allegro," Tennyson's "Tears, Idle Tears," and Burns's "Highland Mary." Holmes's "Chambered Nautilus" and Longfellow's "Hymn to the Night" are among the American lyric poems. Below is the beautiful lyric poem "Break, Break, Break" of Tennyson:

Break, break, break
  On thy cold gray stones, O Sea!
And I would that my tongue could utter
  The thoughts that arise in me.

O well for the fisherman's boy,
  That he shouts with his sister at play!
O well for the sailor-lad,
  That he sings in his boat on the bay!

And the stately ships go on
  To their haven under the hill;
But O for the touch of a vanished hand
  And the sound of a voice that is still!

Break, break, break
  At the foot of thy crags, O Sea!
But the tender grace of a day that is dead
  Will never come back to me.

LYSANDER (lī-săn'dẽr), a Spartan warrior who was detailed to command the fleet in 407 B. C., off the coast of Asia Minor, with the design of overthrowing Athenian power and exalting that of Sparta. In 405 B. C. he attained a decided victory near Aegospotami, by which the war terminated. Being successful in every conflict, he at length undertook to overthrow the constitution of Sparta, but this was prevented by his death in the Boeotian war of 395 B. C.

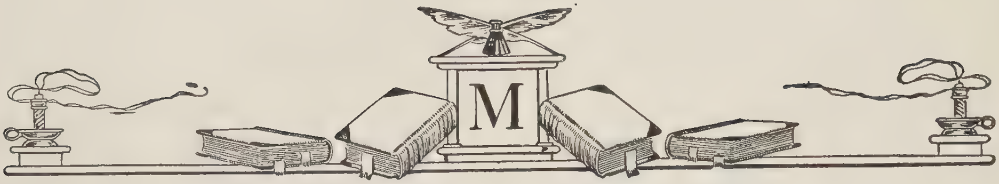
LYSIAS (lĭs'ĭ-ȧs), an orator and rhetorician, born at Athens, Greece, in 458; died in 378 B. C. He studied at Thurium, in Italy, and on returning to Athens was imprisoned as an enemy of the autocratic party, but soon escaped to Asia Minor. When the Tyranny of the Thirty Tyrants was overthrown, he returned to Athens, where he became famous as the author of several hundred orations, of which only 35 are extant. One of those that have come down to us was delivered against Eratosthenes.

LYSIMACHIA (lī-sĭ-măk'ĭ-ȧ), a genus of plants of the primrose family. The species are widely distributed, but only a limited number are native to North America. The *moneywort,* which is cultivated in gardens, is a trailing vine with roundish leaves and bright yellow flowers. It is well fitted for covering rocks, and is used extensively as a plant for hanging baskets. Several species are known as the *loosestrifes*, which have large showy flowers and are cultivated as border plants in gardens.

LYSIPPUS (lȳ-sĭp'pŭs), a Greek sculptor of Sicyon, who flourished in the Peloponnesus in the latter part of the 4th century B. C. He was patronized by Alexander the Great, of whom he made several noted statues. According to Pliny, he worked only in bronze and executed about 1500 works of art. He made a celebrated statue of Jupiter at Tarentum, several busts of Hercules, and the figure of a youth with wings on his ankles in the act of flying from the earth. The famous "Farnese Hercules" made by Glycon is said to have been patterned after an original work of Lysippus. He differed from his predecessors in giving his figures smaller heads and more slender bodies, whereby he endeavored to make men as they appear to be. In the elaboration of particular parts he was unsurpassed, particularly in the execution of the hair.

LYTTON (lĭt'tŭn), **Edward George Earle, Bulwer-Lytton,** author and statesman, born in London, England, May 25, 1805; died at Torquay, Jan. 18, 1873. He was the youngest son of General Bulwer, graduated at Cambridge in 1826, and received a master's degree there in 1835. He married Rosina Wheeler in 1825 in opposition to the wishes of his mother, and, after bearing a daughter and a son, she became freed from the unhappy union. His ability as a writer manifested itself at an early age, and in 1831 he secured an election to Parliament. He was reëlected in 1832, serving until 1841. The Melbourne administration made him baronet in 1835. He succeeded to the Knebworth estates on his mother's death, in 1844, and in 1852 was returned to Parliament. In 1858-59 he held the position of colonial secretary. His public life was eminently successful, yet he was not a strong debater, but several of his addresses were effective and eloquent. As a writer he was prolific, thoughtful, and scrutinizing, and showed mastery in plotting the construction of his themes. His first collection of miscellaneous verse was published in 1826, entitled "Weeds and Wild Flowers." Besides contributing to the *New Monthly Magazine* and a number of other periodicals, he wrote many excellent productions. Among his works are "Pilgrims of the Rhine," "Last Days of Pompeii," "Rise and Fall of Athens," "Lady of Lyons," "Rienzi," "England and the English," "Duchess of La Valliere," "Last of the Barons," "Lucretia," "Eugene Aram," "Harold," and "King Arthur."

LYTTON, Edward Robert Bulwer-Lytton, Earl of, poet and statesman, born in London, England, Nov. 18, 1831; died in Paris, France, Nov. 24, 1891. He was the only son of Bulwer-Lytton, studied at Harrow and later at Bonn, Germany, and took a special course to fit himself for diplomacy. He became attached to the British legation at Washington in 1849, was transferred to Florence in 1852, The Hague in 1856, Constantinople in 1858, Vienna in 1859, Copenhagen in 1863, Athens in 1864, Lisbon in 1865, Madrid in 1868, Vienna in 1869, and Paris in 1873. In the last mentioned year he succeeded to the baronetcy of his father, became ambassador to Lisbon in 1874, and was appointed Viceroy of India in 1876. Queen Victoria was proclaimed Empress of India in 1877, when he directed a ceremonial celebration, and subsequently he took a leading part in the issues of the war with Afghanistan. He resigned in 1880 and returned to England, when he became earl, and seven years later was made ambassador to Paris. As a writer he published largely under the name of "Owen Meredith," his productions including "Clytemnestra and Other Poems," "Battle of the Bards," "Lucile," "Fables in Song," "Legends of Exile," and "Glenaveril." In 1883 he published "Life, Letters, and Literary Remains of Edward Bulwer."



M, the tenth consonant and thirteenth letter of the English alphabet. In form it came from the Phoenician through the Greek and Latin with but little change. It has a labial and nasal articulation and is classed among the liquids. In the English it has but one sound, as in much, man, and time, but in some languages it indicates that the vowel before it is to be pronounced with nasal resonance. In the Roman notation M denotes 1,000, and when written with a dash over it ($\overline{\text{M}}$), 1,000,000.

MAARTENS (mär'tĕns), **Maarten,** novelist, born at Amsterdam, Netherlands, Aug. 15, 1858; died Aug. 4, 1915. He studied at Bonn, Germany, and later in Utrecht. Although he took an extensive course in law, his attention was given to literature at an early age and his writings were in Dutch, German, and English. The moral idea dominates all of his writings, which are quite cosmopolitan in character. Among his books are "A Question of Taste," "The Sin of Joost Avelingh," "My Poor Relations," "Some Women I Have Known," "The Greater Glory," and "The Woman's Victory."

MAB, a mythical personage who was made queen of the fairies by Shelley in his "Queen Mab." She is likewise mentioned by other poets, including Ben Jonson and Shakespeare. In Shakespeare's "Romeo and Juliet" the mischievous ways of Queen Mab are described, but, according to that writer, the office of Mab properly belongs to Titania, the wife of Oberon Titania.

MABIE, Hamilton Wright, author, born at Cold Spring, N. Y., Dec. 13, 1846; died Dec. 31, 1916. He attended Williams College and later studied at the law school of Columbia University, New York City. He was connected editorially for a number of years with the *Christian Union,* subsequently called *The Outlook,* and became well known as a writer and lecturer. His books are devoted largely to essays on nature and literature. They include "Short Stories in Literature," "Nature in New England," "Essays on Books and Culture," "A Child of Nature," "Essays on Nature and Culture," "Under the Trees and Elsewhere," "Works and Days," "In the Forest of Arden," and "Parables of Life."

MACADAM (măk-ăd'ạm), **John Loudon,** inventor and roadbuilder, born in Ayr, Scotland, Sept. 21, 1756; died in Moffat, Nov. 26, 1836. He spent the early part of his life in the United States and first began to study the art of roadbuilding in 1810, when he originated the system known as *macadamization.* This method of building roads consists of forming a crust of broken rocks and solidifying them by passing heavy rollers over the crust. The crust is from six to ten inches in thickness, this depending upon the nature of the soil.

McADOO, William Gibbs, public man, born near Marietta, Ga., in 1863. He studied at the University of Tennessee and practiced law successfully in New York City. In 1901 he became interested in the building of railroad tunnels and was elected president of the Hudson and Manhattan Railway Company. President Wilson made him Secretary of the Treasury in 1913, and in 1917 appointed him Director-General of Railroads. He resigned his offices in 1918.

McALL MISSION, a Protestant mission instituted in France by Robert Whitaker McAll (1821-1893) in 1871, which is the largest of its kind in that country. The founder of this movement was born in Macclesfield, England, Dec. 17, 1821; died May 11, 1893. He was aided in the enterprise by his wife, the two visiting the laboring classes, establishing stations, and distributing literature. The workers in the mission are largely French.

MACAO (mȧ-kä'ȯ), a seaport city of China, near the mouth of the Canton River, forty miles west of Hongkong. It is inhabited chiefly by Portuguese. The cite is partly on an irregular tableland and partly on a small peninsula. A number of forts are located near its harbor, and a lighthouse 330 feet high is within the walls of one of the forts. The chief buildings include a cathedral, several hospitals, and a number of schools and charitable institutions. It has a large trade in tea and rice, but its commercial importance has been lessened by the rapid growth of Hongkong. The Portuguese made the first settlement at Macao in 1577, but it remained Chinese territory until 1887, when it was made a Portuguese colony by treaty. A number of modern municipal improvements are maintained. Population, 1922, 78,650.

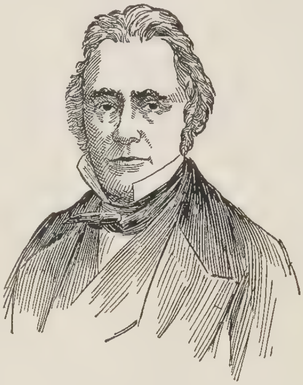
MACARONI (măk-ȧ-rō'nĭ), an article of food composed of the dough of fine wheat flour, usually made into tubes one-eighth of an inch in diameter and about eighteen inches long. The smaller sticks, although made of the same material, are known as *spaghetti* or vermicelli. It is prepared most extensively in Italy and France, but the manufactures of Canada and the United States are steadily growing in importance. Machinery is used in the American manufactures for the purpose of kneading the dough and also for pressing it into sticks. Macaroni is sold in the market packed in boxes. It is a wholesome food and is used principally in the preparation of broth, soup, and pudding.

MACARTHUR (măk-är'thẽr), **Arthur,** soldier, born in Massachusetts, in 1845; died Sept. 5, 1912. He entered the United States army for service in the Civil War as first lieutenant in the 24th Wisconsin infantry. Besides participating in the battles of Stone River and Chattanooga, he took part in the Atlantic campaign, and in 1865 was mustered out of the volunteer service. The following year he entered the regular army as first lieutenant and in 1889 became assistant adjutant general with the rank of major. At the beginning of the Spanish-American War, in 1898, he was promoted to the rank of brigadier general and later to that of major general, and served in Havana, Cuba. In 1899 he was assigned to the Philippines, where he succeeded General Otis as military governor in 1900. In the same year he was made brigadier general in the regular army and in 1901 became major general. He returned to the United States in 1902 and was made commander of the department of the lakes and later of the department of California. In 1906 he was made lieutenant general.

McARTHUR, Duncan, pioneer and soldier, born in Dutchess County, New York, June 14, 1772; died near Chillicothe, Ohio, April 28, 1839. He entered the service against the Miami Indians in 1790, engaged in defenses against the Indians in Kentucky and Ohio, and in 1795 settled at Chillicothe, where he acquired much landed wealth. In 1805 he became a member of the Ohio Legislature, took an efficient part in the War of 1812, and in 1814 succeeded General Harrison as commander of the western army. Subsequently he concluded a treaty of peace with the Indians, became a member and speaker of the Ohio House of Representatives in 1817, and was elected to Congress in 1823 as a Clay Democrat. From 1830 to 1832 he was Governor of Ohio. The life of McArthur is interesting on account of his daring pioneering expeditions and his efficient service, both in military and civil offices.

MACASSAR (mạ-käs'sạr), a strait of the Pacific, extending a distance of 375 miles between Borneo and Celebes, and connecting the Java Sea with the Celebes Sea. It is about fifty miles wide at the northeastern point, and, as it extends toward the southwest, it widens to a breadth of from 100 to 140 miles.

MACAULAY (mȧ-kạ'lĭ), **Thomas Babington, Lord,** author and statesman, born at Rothley, Leicestershire, England, Oct. 25, 1800; died in London, Dec. 28, 1859. He was a grandson of the Presbyterian minister, John Macaulay, entered Cambridge in 1818, and there showed much aptitude for study and devotion to composition and debate. His career at the university was eminently successful. He won several medals and received the bachelor's degree in 1822 and the master's degree in 1825. About the same time he contributed to Knight's *Quarterly Magazine,* publishing a number of productions that attracted wide attention, among them "The Battle of the League," "The Armada," and "The Battle of Ivry." In 1825 he contributed masterful articles on Milton to the *Edinburgh Review,* and in 1830 was made a member of Parliament. In his official capacity he not only proved himself an orator and student of political questions, but in the meantime displayed genius as a man of literature.



LORD MACAULAY.

In 1832 he became secretary of the board of control for India, remaining in that colony until 1838, when he was again elected to Parliament, holding also, in 1840, the office of War Secretary and in 1846 that of Paymaster-General. He continued to hold public office, with occasional lapses, with eminent success until his retirement in 1847, but was reëlected in 1852 from Edinburgh. In 1857 he became a member of the French Academy and was created a peer the same year. Macaulay was a man of splendid talent and classical scholarship, and was both accurate and fair in his historical writings. He was buried in Westminster Abbey. Among the productions not mentioned above are "Lays of Ancient Rome," "Essays," and "History of England from the Accession of James II." His nephew, Sir George Otto Trevelyan, published "Life and Letters of Macaulay" in 1876.

MACAW (mȧ-kạ'), a genus of birds found in tropical South America, remarkable for their size and the beauty of their plumage. They range as far north as Mexico. The macaws belong to the parrot tribe. They may be taught to articulate a few words, but have a harsh and disagreeable cry. The species are designated as red and blue macaw, blue and yellow macaw, and gray-green macaw. The red and blue macaw attains a length of forty inches, the tail measuring about twenty inches. These birds have two broods of young in the year.

MACBETH (măk-bĕth'), King of Scotland, son of Finnlaech, succeeded to the throne in 1040. He attained the succession by defeating King Duncan. His reign of seventeen years became noted for the prosperity and internal improvement developed within the period. In 1050 he went to Rome on a pilgrimage, being the only Scottish king to undertake such an enterprise, and while there provided liberally for the poor in beneficent alms. Malcom Duncan had taken refuge in England at the time of his father's death, and in 1054 made an incursion into Scotland, but not until 1057 was Macbeth finally conquered and slain in Aberdeen. Shakespeare utilized the legends connected with the life of Macbeth, and recounts them in his work bearing that title.

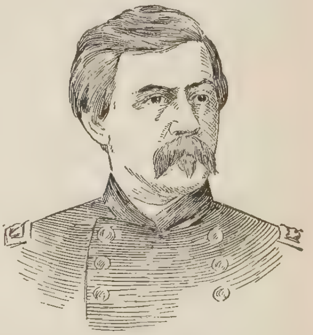
McBURNEY, Charles, surgeon, born in Roxbury, Mass., Feb. 17, 1845; died in 1913. He studied at Harvard and the College of Physicians and Surgeons, New York. In 1870 he began a successful practice as surgeon in New York City, and was connected as lecturer and instructor with a number of medical institutions. He was made sole attending surgeon to the Roosevelt hospital in 1886, where he became known as a most skillful operator. He was consulting surgeon to President McKinley when the latter was shot by the assassin.

MACCABEES (măk'kȧ-bēz), in Jewish history, a name applied to a patriotic family of Hebrews who resisted with remarkable patriotism the persecutions of Antiochus IV., Epiphanes, a Syrian king. Mattathias was the original of the Maccabees, and the term became commonly applied to his descendants. It is recounted that Antiochus was expelled from Egypt by the Romans, after which he made a vigorous attempt to put down the Jewish worship. He endeavored to induce the aged Mattathias, priest of Modin, to adopt the Greek gods and the Grecian mode of offering sacrifices. The messenger sent by the king with bribes was slain by Mattathias, and, aided by his five sons, he destroyed the Grecian idols and escaped with their possessions to the mountains. From their mountain resort they went forth periodically to restore the faith in Jehovah, but Mattathias died in 166 B. C. In the following year his son Judas gathered a number of patriots and reconquered Jerusalem, purified the temple, and instituted the Feast of Decoration, a memorial held annually in succeeding years. A Maccabean dynasty ruled over Jerusalem about a century, the last scion of the house being Hyrcanus, whom Herod the Great, slaughterer of the infants of Bethlehem, put to death, though he was the high priest and a man of great piety.

MACCABEES, Knights of the, a fraternal association founded in 1883, now represented by a large number of subordinate tents and hives. The total membership of the order is 375,575. It is incorporated under the laws of the State of Michigan with headquarters at Port Huron. Benefits are paid in cases of accident, sickness, and death. The Ladies of the Maccabees is an affiliated order of the society.

McCARTHY (mȧ-kär'thĭ), **Justin,** author and statesman, born in Cork, Ireland, Nov. 22, 1830. After receiving a liberal education, he became a member of the editorial staff of the *Northern Times,* Liverpool, in 1853, and was chosen a parliamentary reporter of the *Morning Star* in 1860. In 1868 he came to the United States, where he spent three years in traveling, and on returning to England engaged on the staff of the London *Daily News.* In 1879 he was made a member of the House of Commons as a representative of the Home Rule party, and succeeded Parnell as leader of the Irish parliamentary party in 1890. He not only took high rank as a speaker in Parliament and before the people, but wrote many excellent literary productions. His writings embrace "Waterdale Neighbors," "The Comet of the Season," "The Maid of Athens," "Donna Quixote," "A Fair Saxon," "Prohibitory Legislation in the United States," "History of the Four Georges," "History of Our Own Times," and "Life of Sir Robert Peel." He died April 24, 1912.

McCLELLAN (mȧ-klĕl'lạn), **George Brinton,** general, born in Philadelphia, Pa., Dec. 3, 1826; died at Orange, N. J., Oct. 29, 1885. His early education was by private tutors, after which he attended the University of Pennsylvania for two years, and in 1846 graduated from West Point. He served during the entire period of the Mexican War as an engineer, and attained to the rank of captain. In 1848 he was appointed instructor of engineering at West Point, was dispatched to Europe for the purpose of observing the allied armies in operation during the Crimean War, and in 1861 reported to Congress in a document entitled "The Armies of Europe." After 1857 he was engaged as chief engineer and as an official of the Illinois Central Railroad.



GEORGE B. MCCLELLAN.

At the beginning of the Civil War Governor Dennison of Ohio appointed McClellan major general of volunteers, and in May of the same year President Lincoln made him major general of the department of the Ohio. He immediately moved into Virginia, forcing the Confederates to retreat from the western part of the State, and soon after a convention declared the loyalty of that portion, which was admitted into the Union as a separate State in 1862. In November, 1861, he succeeded General Scott as commander of all the armies of the United States, having previously served for a brief period as commander of the army of the Potomac. The first Battle of Bull Run had demoralized the forces in the vicinity of Washington, but McClellan showed much efficiency in restoring confidence and discipline. However, he was tardy in moving upon the enemy, a fact that discouraged both the people and the President, but in March, 1862, he undertook the disastrous Peninsular Campaign. The Seven Days' Battles took place from June 25 to July 1 in the vicinity of Richmond, but there was an overestimation of the enemy's strength as well as a lack of unanimity between him and the administration, both operating to lessen concerted action, and McClellan was obliged to evacuate the Peninsula.

McClellan was soon after deprived of his command, a part of his forces being added to the troops under General Pope, but, after the defeat in the second Battle of Bull Run, he was again put in command of this army. On Sept. 17 he commanded in the Battle of Antietam, in which the Confederates under Lee were forced to retreat, but the advantages to the Union army were lost by McClellan hesitating to pursue the retreating Confederates, on account of which he was relieved of his command on Nov. 7, 1862, being succeeded by Burnside. McClellan remained on waiting orders until 1864, when he resigned from the army, and was nominated for the Presidency by the Democrats. Abraham Lincoln was his opponent, receiving 2,213,665 of the popular votes and 212 electors, while McClellan received 1,802,237 popular votes and 21 electors, states representing 81 electors not voting that year. He was phenomenally popular with the army of the Potomac in spite of outside criticism. Shortly after the election he went to Europe, where he spent four years in travel and research, and, returning to New York, became engineer in chief of the department of docks of New York City. In 1877 he was elected Governor of New Jersey. He wrote "Manual of Bayonet Exercise," "Organization and Campaigns of the Army of the Potomac," and "McClellan's Own Story."

McCLERLAND, John Alexander, soldier, born in Breckenridge County, Kentucky, May 30, 1812; died Sept. 20, 1900. He received an elementary education in Illinois and was admitted to the bar, and served as a private in the Black Hawk War. In 1832 he commenced a successful law practice in Shawneetown, Ill., where he afterward published a newspaper. He was a member of the State Legislature and was elected to Congress as a Democrat in 1843, serving until 1851, and was again elected in 1859. At the beginning of the Civil War he resigned as a member of Congress, and entered the Union army as brigadier general of volunteers. In 1862 he commanded at Fort Donelson and for distinguished services was promoted to be a major general. In the same year he commanded at the Battle of Shiloh, superseded General Sherman as commander of the Vicksburg expedition in 1863, and was soon after superseded by General Grant. In 1864 he resigned from the service, and took up the practice of law at Springfield, Ill.

MACCLESFIELD (măk′k'lz-fēld), a town of England, in Cheshire, fifteen miles southeast of Manchester. It is on the Bollin River and several railways and has manufactures of machinery, earthenware, and cotton and silk textiles. The markets, gas works, cemetery, public baths, and electric railways are owned by the municipality. It has an infirmary, a townhall, and several schools and churches. Coal, stone, and slate are obtained in the vicinity. Population, 1922, 36,354.

McCLINTOCK (mȧ-klĭn′tŭk), **Sir Francis Leopold,** explorer, born in Dundalk, Ireland, July 8, 1819; died Nov. 17, 1907. In 1831 he entered the navy and became lieutenant in 1845. Soon after he joined the Arctic expedition sent in search of Sir John Franklin, when he made a journey of 760 miles along the north shore of Parry Sound. He became commander in 1851, sailed the following year to the polar regions under Sir Edward Belcher, and in 1857 commanded an expedition fitted out by Lady Franklin, which discovered evidences of Sir John Franklin's fate. In 1884 he was made admiral and was put on the retired list. He published "The Voyage of the Fox in the Arctic Seas."

McCLOSKEY (mȧ-klŏs′kĭ), **John,** Roman Catholic priest, born in Brooklyn, N. Y., March 20, 1810; died in New York City, Oct. 10, 1885. He studied at Saint Mary's College, Emmitsburgh, Md., received priest's orders in 1834, and spent two years in studying at Rome, Italy. In 1837 he was made pastor of the Church of Saint Joseph, New York, became president of Fordham College in 1841, and was consecrated bishop in 1844. He was made Archbishop of New York in 1864, succeeding Archbishop Hughes, and was created cardinal in 1875, being the first American to hold that rank.

McCLURE (mȧ-klūr′), **Alexander Kelly,** journalist, born in Perry County, Pennsylvania, Jan. 9, 1828. After attending the district schools, he was apprenticed to a tanner in 1842, but soon began writing as correspondent to periodicals. In 1846-50 he published the Miffin *Sentinel,* a Whig newspaper, and in the latter year became editor of the Chambersburg *Repository,* which he made influential in advocating the liberation of the slaves. He was State printer in 1855, was an organizer of the Republican party in Pennsylvania, and served in the State Legislature in 1857-58. The following year he was elected to the State Senate, supported Lincoln for President in 1860 and 1864, and was a leader of the Liberal Republicans who favored Greeley in 1872. In 1875 he retired from politics and founded the Philadelphia *Times,* which he edited until 1901. He published "Our Presidents and How We Make Them," "Three Thousand Miles Through the Rocky Mountains," and "Recollections of Half a Century." He died June 6, 1909.

McCLURG, Alexander Cadwell, publisher, born in Philadelphia, Pa., in 1835; died April 15, 1901. He graduated at Miami University, Oxford, Ohio, and became associated with a publishing firm in Chicago, but joined the Union army as a captain in 1862. Subsequently he was made a colonel and brevetted brigadier general, took part in the campaigns in the vicinity of Atlanta, and accompanied Sherman on his march to the sea as chief of staff of the 14th army corps. After the war he again engaged as publisher at Chicago.

McCOMB, a city of Pike County, Miss., 58 miles east of Natchez, on the Illinois Central Railway. It is in a fertile region and has cotton mills, railroad shops, lumber mills, waterworks, and public parks. The features include the city hall, high school, federal building, electric lights and railways, and McComb City Hospital. It was incorporated in 1874. Pop., 1920, 7,775.

McCOOK, Alexander McDowell, general, born in Columbiana County, Ohio, April 22, 1831; died in 1903. In 1852 he completed the course at the West Point Military Academy, joined the United States infantry, and served against the Apaches in New Mexico, after which he was instructor at West Point from 1858 until 1861. In the latter year he entered the Union service, was appointed colonel of the first Ohio regiment, and commanded that division of the army in the Battle of Bull Run. Subsequently he commanded a division of the army of the Ohio in the Mississippi and Tennessee campaigns, taking part in the battles of Perryville, Murfreesboro, and Chickamauga. Subsequent to the war he was mustered out of the volunteer service, became colonel in 1880, brigadier general in 1890, and major general in 1894. In 1896 he was one of the representatives of the President to Russia for the purpose of attending the coronation of Czar Nicholas II.

McCOOK, Daniel, general, born in Carrollton, Ohio, July 22, 1834; died July 21, 1864. He was a brother of Alexander M. McCook, graduated from the Alabama University in 1858, and began the practice of law at Leavenworth, Kan. At the beginning of the Civil War he became captain of a local regiment, was soon after made colonel in the army of the Ohio, and was raised to the rank of colonel for distinguished service at the Battle of Shiloh. He displayed bravery in the battles of Perryville, Mission Ridge, Chickamauga, and Kenesaw Mountain. While leading an assault in the last named battle, on July 16, 1864, he was mortally wounded. He attained to the rank of brigadier general.

McCOOK, Robert Latimer, general, born in New Lisbon, Ohio, Dec. 28, 1827; died near Salem, Ala., Aug. 6, 1862. He was a brother of Alexander M. McCook, entered the Union service at the beginning of the Civil War, and distinguished himself under General Rosecrans in West Virginia in 1861. While commanding a division in General Buell's army, in 1862, he was wounded and shortly after was shot by guerrillas while lying in an ambulance. His rank was that of a brigadier general.

McCORMICK (mȧ-kôr′mĭk), **Cyrus Hall,** inventor, born in Walnut Grove, Va., Feb. 15, 1809; died in Chicago, Ill., May 13, 1884. He was the son of a farmer and received a common school education. Subsequently he worked on a farm and in a workshop, and in 1831 invented his reaper, which was patented in 1834. Being successful in placing his machine on the market, he removed to Chicago in 1847, where he erected vast harvester works. In 1859 he made a large gift to the McCormick Theological Seminary in Chicago, a Presbyterian institution, and later endowed a chair in Washington and Lee University, besides showing much liberality in promoting various enterprises. The entire contributions made by him and his heirs for benevolent purposes aggregate fully $1,000,000. He was shown many distinctions for his inventions, among them an official position in the Legion of Honor of France. See **Harvesting Machinery.**

McCORMICK, Ruth Hanna, member of Congress, born at Cleveland, Ohio, March 27, 1880. Her father, Marcus A. Hanna, was a prominent statesman in Ohio and United States Senator. She was educated in private schools and became interested in political, industrial, and civic problems. In 1903 she married Medill McCormick of Chicago, Ill. In the general election on Nov. 6, 1928, she received a total of 1,711,651 votes for Congress, surpassing the vote of her opponent and also that of Richard Yates, who also was a candidate-at-large for Congress. Mrs. McCormick is the first woman to be elected in a statewide vote.

McCOSH (mȧ-kŏsh′), **James,** educator, born in Ayrshire, Scotland, April 1, 1811; died in Princeton, N. J., Nov. 6, 1894. He was a son of an agriculturist, studied at Glasgow University and the University of Edinburgh, and was made pastor in 1835. In 1843 he joined the Free Church movement. Among his writings are "Intuitions of the Mind Inductively Investigated," "Laws of Discursive Thought," "Examination of J. Stuart Mill's Philosophy," "Realistic Philosophy Defended," "Scottish Philosophy," "Emotions," and a work in eight parts entitled "Philosophical Series."

McCURDY, James Frederick, educator, born at Chatham, New Brunswick, Feb. 18, 1847. He studied at the University of New Brunswick and the Theological Seminary, Princeton, N. J., and subsequently studied advanced courses at Göttingen and Leipzig, Germany. In 1885 he became lecturer at Princeton and the following year was made professor of Oriental languages in the University of Toronto. He wrote a commentary on Haggai, which was contributed to the American edition of Lange-Schaff's "Commentary of the Bible." His books include "History, Prophecy, and the Monuments," "Aryo-Semitic Speech," and "The Life and Work of the Rev. D. J. Macdonnell."

McCUTCHEON, John Tinney, cartoonist and lecturer, born near South Raub, Ind., May 6, 1870. He spent his childhood on a farm, attended the public schools at Lafayette, and graduated from Purdue University, in 1889. Soon after he began to contribute to newspapers and other periodicals, including the Chicago *Record.* In the campaign of 1896 he attracted much attention by his cartoons illustrating the issues of the political contest. Two years later he started on a trip around the world on a dispatch boat, remaining abroad during the Spanish-American War and witnessing the Battle of Manila Bay. In 1899 he made a tour through India and China, after which he returned to the Philippines, and subsequently joined the Boers in South Africa to report for his newspaper. He furnished many political cartoons for the Chicago *Herald* in 1900. Three years later he became the cartoonist of the Chicago *Tribune.* He published "Cartoons by McCutcheon," "Bird Center Cartoons," "Stories of Filipino Warfare," "The Mysterious Stranger," and "The Cartoons that made Prince Henry Famous."

MACDONALD (mȧk-dô-nȧl′), **Etienne Jacques Joseph Alexandre,** Marshal of France, born at Sedan, France, Nov. 17, 1765; died near Guise, Sept. 24, 1840. He descended from a Jacobite family, joined the army in 1784, and for distinguished service against the Prussians was made general in 1795. In 1797 he invaded Italy, where he occupied Rome and served as governor of the Papal States. Subsequently he fought at Trebbia against the Russians, and in 1800 was made commander of the army in Switzerland. As he was associated with Moreau in 1805, Napoleon did not include him as a marshal, but in 1809 he was given command of an army in Italy, and for bravery at Wagram against the Austrians was made Marshal of France and Duke of Taranto. The Germans under Blücher defeated him with great loss at Katzbach in 1813, but he took an efficient part in the Battle at Leipzig, making his escape after the evacuation by swimming the Elster. In the campaigns of 1814 he had the utmost confidence of Napoleon, being intrusted with the important duty of carrying his abdication to Paris. He remained faithful even after all others had forsaken the great commander, and for his fidelity received the saber of Murat Bey. In 1816 he was honored with the chancellorship of the Legion of Honor, holding that position until 1831, and at his death was succeeded by his son, Alexander, as Duke of Taranto.

MACDONALD (măk-dŏn′a̤ld), **Flora,** heroine of Scotland, born in Milton, Hebrides Islands, in 1722; died at Peinduin, Scotland, March 4, 1780. Her father died when she was but two years of age, and she was adopted by Lady Clanranald, who provided for her education at Edinburgh. Prince Charles was defeated at Culloden, and, being disguised as Betty Burke, the "Irishwoman," Flora conducted him from Ormiclade, in Benbecula, to Monkstadt, in Skye, and thence to Portree, where he was safely cared for by Macdonald of Kingsburgh. When this exploit was discovered, the English authorities arrested her and held her captive about a year, but her heroic bravery caused the Jacobites to accord her distinguished honors. She married Allan Macdonald of Kingsburgh in 1750, and in 1774 they emigrated to North Carolina. When the Revolution commenced, Macdonald was made a brigadier general in the British army, but was soon captured by the colonial troops. In 1779 Flora returned to Scotland, where her husband joined her two years later, and the family settled in Kingsburgh. She is described as of fine features, medium stature, and commanding presence. Her burial took place at Kilmuir, where an Iona cross of Aberdeen granite was erected over her grave in 1880.

MACDONALD, George, novelist and poet, born in Huntly, Scotland, Dec. 10, 1824; died Sept. 18, 1905. He studied at Aberdeen University and the Highbury Independent College, London, with the intention of becoming a Congregational minister. Shortly after completing the course he was appointed to a charge in Sussex and later at Manchester, but subsequently gave up preaching on account of delicate health and settled in London for the purpose of pursuing a literary course. Afterward he went over to the Church of England, preached and lectured at different times, and was particularly interested in addressing meetings of children and juveniles. In 1877 a pension of $500 was settled upon him in acknowledgement of his efficiency in contributing to literature. He lectured in Canada and the United States in 1872 and 1873. Many of his books have been widely read. His more important writings include "Annals of a Quiet Neighborhood," "Saint George and Saint Michael," "What's Mine is Mine," "The Miracles of Our Lord," "Dealing with Fairies," "Disciples and Other Poems," "The Hope of the Gospel," "Poetical Works," and a collection of "Essays."

MACDONALD, Sir John Alexander, Canadian statesman, born in Glasgow, Scotland, Jan. 11, 1815; died in Ottawa, Ontario, June 6, 1891. He accompanied his father to Canada in 1820, settling near Kingston, and received an education in the Royal Grammar School. In 1844 he entered political life as a Conservative, became a member of Parliament for Kingston, and later was Receiver-General and then Commissioner of Lands. In 1854 he was made Attorney-General and became Premier in 1867, holding the latter position until 1873. From 1878 until his death he was the most influential leader of Canada, serving in the meantime as Premier and as Minister of the Interior. Among the movements which he supported were the building of the Canadian Pacific railway, the organization of the imperial federation, and vast internal improvements relating to educational and industrial arts.

MACDONALD, J. Ramsay, public man, born at Lossiemouth, Scotland, in 1866. His parents were Scottish peasants and provided for his education at a boarding school and other institutions. He was first affiliated with the Liberal party, which he left in 1894, and joined the Labor party, of which he was secretary and a leader. In 1906 he was elected to Parliament, serving until 1918, and was again elected to Parliament in 1922, this time from a mining district in the southern part of Wales. He became prominent as a parliamentarian, was a successful leader of the labor movement, and in 1923 succeeded Stanley Baldwin as Premier. Defeated in 1924, he remained a leading figure, and in 1929 again became Premier. In that year he visited the United States on a mission to reduce armaments.

McDONOUGH (măk-dŏn′ō̇), **Thomas,** naval officer, born in Newcastle, Del., Dec. 23, 1783; died at sea, Nov. 16, 1825. In 1800 he became a midshipman, served under Decatur in the Tripolitan War of 1803-04, and in 1807 was made lieutenant. In the War of 1812 he was in command of a squadron on Lake Champlain, where he defeated a British fleet under Captain Downie. In 1824 he commanded the *Constitution* while on a cruise to the Mediterranean.

McDOWELL (măk-dou′ĕl), **Irvin,** general, born in Columbus, Ohio, Oct. 15, 1818; died in San Francisco, Cal., May 4, 1885. From 1841 until 1845 he was instructor at the West Point Military Academy, but joined the army at the beginning of the Mexican War, securing a promotion to the rank of captain for gallantry at Buena Vista. He became commander of the army of the Potomac and fought against Beauregard in the Battle of Bull Run, where he rendered efficient service, but could not check the panic-stricken recruits in the retreat. He became commander of the reorganized army of the Potomac in 1862, and later was made major general of volunteers under command of General McClellan. In 1865 he was placed in command of the department of the Pacific, and the following year was promoted to the rank of major general.

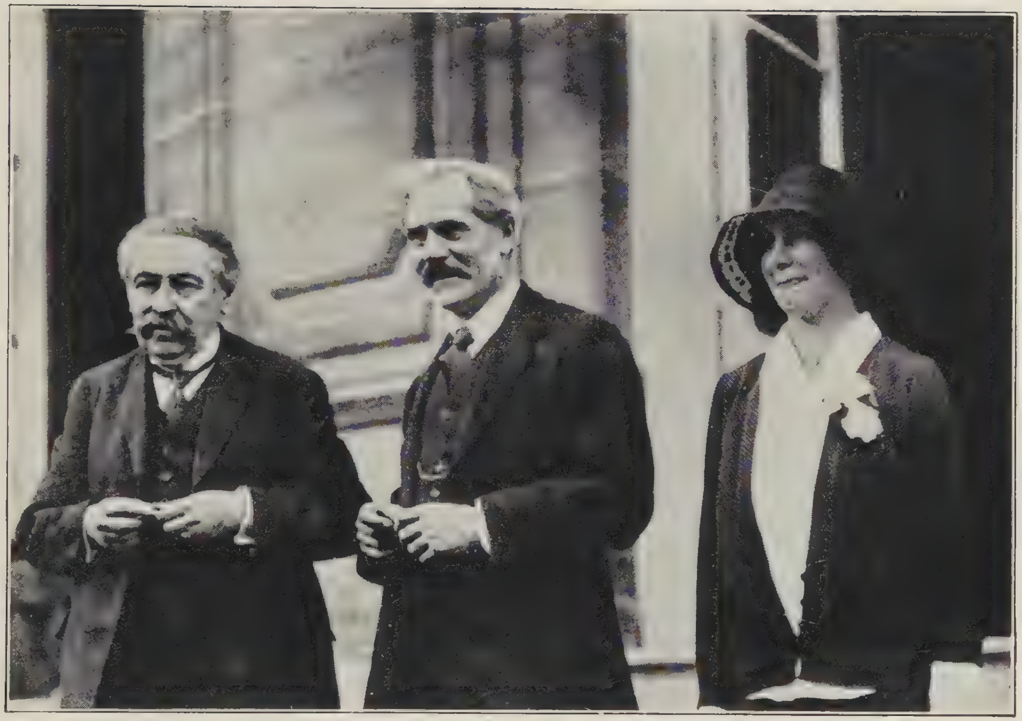
MACDUFF, a nobleman of Scotland, whom Shakespeare represents as a prominent character in his play entitled "Macbeth." He was instrumental in defeating Macbeth in the Battle of Lumphanan in 1057.

McDUFFIE (măk-dŭf′fĭ), **George,** statesman, born in Columbiana County, Georgia, in 1788; died in South Carolina, March 11, 1851. After taking a general course of study, he devoted his attention to law and was admitted to the bar in 1814, establishing a practice at Edgefield, S. C. Four years later he was elected as a Democrat to the South Carolina Legislature, and served in Congress from 1821 to 1834, where he became distinguished as an advocate of states' rights, an opponent to high protective tariff laws, and criticism of President Jackson's administration. In 1834 he became Governor of South Carolina. He retired to private life two years later, but served as United States Senator from 1842 to 1846. He published "Eulogy on Robert Y. Hayne."

MACE, an aromatic spice made from the dried membranous covering of the seed of the nutmeg. The portion used for its manufacture is the aril or inner covering, which is fleshy and has a crimson hue when fresh. The flavor of mace resembles that of nutmeg. It is produced chiefly in the Spice Islands, and is used principally for making pickles and in cooking. Mace is also the name of a staff of office, usually borne by officials or displayed on the table of legislative bodies as a symbol of authority.

MACEDONIA (măs-ē̇-dō′nĭ-ȧ), an ancient country of Europe, lying north of Thessaly and the Aegean Sea. Its history dates back to the year 700 B. C., when Perdiccas I., according to tradition, was the first king, but all history regarding it prior to 490 B. C. is wrapped in obscurity. In the latter year it was invaded by the Persians, who compelled the Macedonian king, Alexander I., to join Xerxes in an expedition to Egypt. In the year 359 B. C. Philip II. subdued all opposition and established himself on the throne of Macedonia. His reign was successful and prosperous, and his son, Alexander the Great, strengthened the army, encouraged internal improvements, and made himself undisputed sovereign over large parts of Europe, Asia, and Africa. Among the flourishing cities of Macedonia in the time of Alexander the Great were Pella, Thessalonica, Pydna, Potidaea (Cassandria), Phillipi, and Olynthus. At his death Macedonia lost many of its possessions under a division of the empire into four kingdoms. Soon after Greece was separated from it, and the battle of Pydna in 168 B. C. made it a province of Rome. The region is now inhabited by Wallachians, Greeks, Albanians, and Turks, and since 1919 has belonged to the Kingdom of Greece. The inhabitants of this part of Greece, which corresponds nearly to the vilayet of Saloniki, have been subjected to many atrocities by the Turks. An acute stage was reached in 1903, when Austria-Hungary and Russia interceded for the Christian inhabitants of that region.

MACEIÓ (mä-sâ-yō′), or **Maçayó,** a seaport city of Brazil, capital of the state of Alagoas, 130 miles southwest of Pernambuco. It is pleasantly located on the Atlantic coast and has connection with interior points by several railways. The manufactures include cigars, cotton goods, and machinery. It has extensive shipyards and



FRANCE AND ENGLAND REPRESENTED AT THE LEAGUE OF NATIONS

This portrait was taken at Geneva, Switzerland, in September, 1929, on the occasion of an exchange of greetings between the two premiers, Premier Aristide Briand of France and Premier J. Ramsay Macdonald of England. The latter is accompanied by his daughter, Miss Ishbel Macdonald. For a sketch of Premier Briand see page 369, and for a sketch of Premier Macdonald see page 1660.

a large trade in corn, cotton, hides, and fruits. Population, 1922, 34,286.

McENERY, Samuel Douglas, public man, born at Monroe, La., May 28, 1837; died June 28, 1910. He studied at Spring Mill College, Ala., and later at the United States Naval Academy. Later he graduated at the National Law School at Poughkeepsie, N. Y., and was a lieutenant in the Confederate army during the Civil War. After the war he engaged in the practice of law, was elected Lieutenant Governor of Louisiana in 1879, and two years later, on the death of Governor Wiltz, succeeded to the Governorship. In 1884 he was elected Governor, serving four years, and was then made associate justice of the supreme court of the State. In 1897 he was elected United States Senator as a Democrat and was reëlected in 1903.

MACEO (mȧ-sā'ō), **Antonio,** Cuban general, born near Barajagua, in Santiago de Cuba, in 1848; died from the effects of a wound received in battle on Dec. 4, 1896. He fought under Gomez during the ten years of contest for liberation, beginning in 1868, and attained to the rank of major general of cavalry. In 1873 his efficient service was instrumental in General Weyler's defeat at Guiramo, but subsequently he was obliged to take refuge in Costa Rica. It was his ambition to free Cuba from Spanish dominion, on account of which he organized a second revolution in 1888, but was compelled to flee. When Gomez succeeded, in 1895, with his project of organizing formidable opposition to the Spaniards, Maceo and his brother hastened to his assistance. His brother, Jose, was killed in battle in the spring of 1896, but Antonio fought on successfully in the province of Pinar del Rio until his death.

MACFARREN (măk-făr'rẹn), **Sir George Alexander,** musical composer, born in London, England, March 2, 1813; died Oct. 31, 1887. His musical training was secured at the Royal Academy of Music. In 1838 he became professor of harmony in that institution, was made its principal in 1875, and later became professor of music at Cambridge University. The queen knighted him in 1883. He was blind the greater portion of his life, but was assisted by his wife, who wrote his compositions from dictation. Among his principal productions are "The Chevy Chase," "May Day," "John the Baptist," "Charles II.," "Robinhood," "Don Quixote," "King David," and a treatise entitled "Rudiments of Harmony."

McGEE (mȧ-gē'), **Thomas D'Arcy,** author and public man, born at Carlingford, Ireland, April 13, 1825; died April 7, 1868. He emigrated to Canada in 1857, but later settled at Boston, Mass., where he was editor of the *Pilot.* In 1845 he returned to Ireland and for some time edited the Dublin *Nation.* Later he became proprietor of the New York *Nation* and in 1857 took up his residence in Canada, at Montreal, where he founded the *New Era.* In 1858 he was elected a member of Parliament, was a member of the ministry, and later served as president of the council. Having incurred the enmity of the Fenians, he was assassinated while returning from a session of Parliament. His books include "Popular History of Ireland," "Ballads and Occasional Verses," and "History of the Irish Settlers in North America."

McGILLIVRAY (mȧ-gĭl'vẽr-ĭ), **Alexander,** Creek chief, born in Alabama about 1740; died Feb. 17, 1793. He was the son of a Scotch trader, studied at Charleston, S. C., and engaged in commercial pursuits at Savannah. During the Revolution he supported the royalist party, and afterward engaged in trade with the Indians, having previously been chosen emperor of the Creek nation. He was prominent as an instigator of border hostilities until 1790, when he made a treaty of peace with the United States, but remained chief of the Creeks until his death. His plantation was near Wetumpka, Ala., where he maintained extensive quarters and had a large number of Negro slaves.

McGILL UNIVERSITY, an institution of higher learning at Montreal, Quebec. It is so called from its founder, James McGill, who, two years before his death, bequeathed his property of Burnside, then valued at £20,000, together with a sum of £10,000 in money, to found a college in a Provincial University, the erection of which had already been provided for by the generosity of the British government. This property was, on his death, conveyed to the Royal Institution for the Advancement of Learning, a body which, in 1802, had been incorporated by the Legislature for the establishment of free schools and the advancement of learning in the Province of Quebec.

Owing to persistent opposition by a section of the people to any system of governmental education and to the refusal of the Legislature to make the grants of land and money which had been promised, the proposed establishment of the Provincial University by the government was abandoned. Thereupon, the Royal Institution took action on its own account and in 1821 obtained a royal charter. On account of protracted litigation, however, they were unable to obtain possession of the estate until 1829, when the work of teaching began with two faculties, those of arts and medicine. In 1852 a number of prominent citizens of Montreal became interested in the institution and a new charter was secured. At that time there were only three faculties, those of arts, medicine, and law, with sixteen professors and four assistants. Shortly after the William Molson Hall, erected by the generous donor whose name it bears, was provided to serve as a library and convocation hall. Subsequently other buildings were erected, including the new quarters for the faculty of medicine, but this structure was partly destroyed by fire in 1907, after which a magnificent new and wholly up-to-date building was erected. The course of medicine now extends over five sessions of about eight months each.

The faculty of applied science dates back to 1857, when a chair of civil engineering was established in the faculty of arts. However, the faculty cannot be said to have had an organic existence until 1893, when a separate building was provided for the work in applied science. This building, provided through the generosity of Sir William Macdonald, was destroyed by fire in 1907, but it has since been rebuilt on a larger scale. The equipment of this building is exceedingly valuable, comprising all the latest inventions and the newest machinery, especially in connection with the departments of mechanical, electrical, and civil engineering. Other noteworthy structures include the physics building, the chemistry building, the museum, the library, the McGill Union, the Strathcona Hall, the Royal Victoria College, and the Macdonald College. The last mentioned institution is on a tract of 560 acres, at Saint Anne de Bellevue, about 20 miles from Montreal. This property contains a total of seven buildings and all have been constructed and equipped in the most up-to-date fashion. No expense has been spared in this respect by the founder, Sir. William Macdonald, who has endowed it with over $2,000,000.

McGill University owes its foundation and its existence to private generosity. The greatest of its benefactors, as already indicated, is Sir William Macdonald, who has, in one way or another, donated to the university nearly $5,000,000. Other generous contributors include Lord Strathcona, Peter Redpath, J. H. R. Molson, William Molson, and Thomas Workman. Apart from Macdonald College, the total endowments amount to $4,500,000 and the value of the property, leaving Macdonald College out of account, is over $2,500,000. The number of students in attendance is about 2,800 and there are in the several faculties 185 professors, 25 assistant professors, and 130 lecturers, tutors, and demonstrators. At present there are 212,000 volumes on the library shelves, but there is a working capacity for at least double that number. McGill University may be said to have had eminent educators at the head of the institution, including Sir William Dawson, Dr. William Peterson, and Sir Arthur W. Currie, the present principal.

MACGREGOR (mạ-grĕg′ọr), **John,** canoeist and philanthropist, born in Gravesend, England, Jan. 24, 1825; died May 16, 1892. He studied at Trinity College, Dublin, and at Cambridge, graduating at the latter institution in 1847. Subsequently he traveled extensively in Eurasia and Africa, was admitted to the bar in 1851, and later made several extensive visits to the United States and Canada. Many of his travels were by canoe, and his ability as a canoeist inspired much interest in canoeing. As a lecturer he attained eminent success, and gave funds amounting to $500,000 to education and charities. His writings were issued under the pseudonym "Rob Roy." They include "A Thousand Miles in the Rob Roy Canoe," "Rob Roy on the Baltic," and "Rob Roy on the Jordan, Nile, and Red Sea."

MACGREGOR, Sir William, public man, born in Scotland, in 1847. He was educated at Aberdeen and Glasgow and acquired prominence as a surgeon. For some time he held important executive positions in Lagos and British New Guinea, and was honored by many scientific societies with medals and official positions. In 1902 he represented the colonies of West Africa at the coronation of Edward VII. He was made Governor of Newfoundland in 1904.

MACHIAVELLI (mä-kē̇-ȧ-vĕl′lē̇), **Niccoló di Bernardo dei,** statesman and historian, born in Florence, Italy, May 3, 1469; died there June 22, 1527. He was a son of Bernardo Machiavelli, who had a reputation as a jurist, secured a liberal education, and entered public life in 1494, when the Medici were expelled from Florence. At that time the Florence republic was organized under the reforms established by Savonarola, and in 1498 Machiavelli became secretary of a board of ten, in whom were vested the military and civil powers of the new government. This position he held a period of fourteen years, and in its capacity visited various courts of Europe for the purpose of forming treaties, establishing embassies, and guarding the perpetuity of his native city. When the Medici were restored, in 1512, he was surrounded by political and personal enemies, causing him to be placed under arrest on a charge of conspiracy. Though subsequently liberated, he was deprived of his appointments. He then retired to his country home of Sam Casciano, where he devoted himself to the extensive works in literature that have made his name immortal.

In 1526 Machiavelli was employed by Clement VII. to examine the fortifications at Florence, but in the organized attempt of the Florentines for independence, in 1527, he was generally distrusted and not permitted to take a prominent part in the movement for liberation. In the spring of the same year the Medici rulers were again expelled and the republic was proclaimed, but Machiavelli was sorely disappointed in not being consulted. His works include "History of Florence from 1215 to 1492," "Discourses on the First Ten Books of Livy," and "The Prince." In the last named work the author defends sovereign rulers, pointing out means whereby princes may secure and maintain authority without consent of their subjects, and indicates that any available means may be used for the purpose of sustaining the governmental power. In this regard it not only reflects the character of European politics in the early part of the 16th century, but likewise exhibits characteristic phases of the theory held by sovereigns in relation to what they call the divine right of kings.

MACHINE GUN, a designation commonly applied to any ordnance that may be loaded and fired in rapid succession by mechanical appliances and combinations. The first ordnance of this character was used in the Franco-German War of 1870-71, but soon after the celebrated Gatling gun was invented and manufactured in the United States. Among the different classes of machine guns utilized in warfare are the Gatling, Hotchkiss, Maxim, Vickers, Lewis, and Browning. These guns are capable of discharging from 200 to 350 rounds in half a minute with ease and accuracy. They differ more or less in size and efficiency, but may be grouped in two classes. The two classes include those in which the recoils of the barrel, or force of the powder gases, act to operate the gun, and those in which the gun is operated by some exterior force, as by the hand.

MACKAY (må-kī′), **John William,** capitalist, born in Dublin, Ireland, Nov. 28, 1831; died July 20, 1902. He came to New York City when nine years of age, where he began as a common laborer in a shipyard. In 1851 he went as prospector for gold to California and acquired a small capital by hard labor and prudent economy. He went to Nevada in 1860 and became interested in the Bonanza Mines of the Comstock Lode, which he developed in connection with his partners Flood, Fair, and O'Brien. These mines produced in one year gold and silver amounting to about $150,000,000. He planned and organized the Bank of Nevada, of which he was president a number of years, and withdrew from that institution at the time Flood made a disastrous attempt to corner wheat. In 1884 he joined James Gordon Bennett in founding the Commercial Cable Company, afterward was president of the Postal Telegraph Cable Company, and made liberal gifts to charities. His death occurred in London, England, from prostration by heat.

McKEESPORT (må-kēz′pōrt), a city of Allegheny County, Pennsylvania, on the Monongahela River, twelve miles southeast of Pittsburg. It is on the Pennsylvania, the Baltimore and Ohio, and the Pittsburg and Lake Erie railroads. The chief buildings include the Carnegie Library, the high school, the Douglass Industrial College, the McKeesport Hospital, the Y. M. C. A. building, and many schools and churches. It has manufactures of ironware, electrical supplies, tin plate, machinery, engines, glass, lumber products, tubes, radiators, and tobacco. The surrounding country is fertile and contains a large commercial and jobbing trade, of which a considerable portion is carried by motor trucks. The city has extensive municipal facilities, including street railways pavements, electric lights, and waterworks. McKeesport was settled in 1795 and incorporated in 1842. Population, 1900, 34,227; in 1920, 45,975.

McKEES ROCKS, a borough of Pennsylvania, in Allegheny County, on the Ohio River, a short distance northwest of Pittsburg. It is on the Pittsburg and Lake Erie, the Pennsylvania, and the New York Central railroads, and is noted for the manufacture of flour, glass, machinery, and steel and iron products. Population, 1900, 6,352; in 1920, 16,719.

McKENNA (må-kĕn′nå), **Joseph,** jurist and statesman, born in Philadelphia, Pa., Aug. 10, 1843; died Nov. 21, 1926. In 1855 he removed to California. After graduating from St. Augustine College, at Benicia, Cal., he studied law and in 1865 was admitted to the bar. His work in Congress became noted through his efficient and influential service on several important committees. President McKinley appointed him Attorney-General in his Cabinet in 1897, and in December of the same year was made associate justice of the United States Supreme Court, serving until Jan. 5, 1925, when he resigned.

MACKENSEN, August von, general, born in Saxony in 1850. He studied for a military career and became a member of the Life Guards in 1869, in which position he developed as a strategist. In 1870 he attained distinction in the war against France. The zenith of his military career was reached in 1915, when he invaded Poland and expelled the Russians from western Galicia, capturing Przemysl and Lemberg after they had been in possession of the Russians. Later he conducted campaigns against Servia, Rumania, and southwestern Russia, where he met signal successes.

MACKENZIE (må-kĕn′zĭ), a river of British America. It rises as the Athabasca River in the Rocky Mountains, thence flows a distance of about 600 miles, entering Lake Athabasca, thence has a course of 240 miles as the Slave River to Great Slave Lake, and thence takes on the name of Mackenzie River, flowing northwest for a distance of 1,050 miles into the Arctic Ocean. The entire course is over 2,000 miles and the basin drained equals 575,000 square miles. It was named from Alexander Mackenzie (1755-1820), who discovered it in 1789.

MACKENZIE, a district of Canada, which occupies the greater part of the Mackenzie River valley and the north central part of the Dominion. It is bounded on the north by the Arctic Ocean and Franklin, east by Keewatin, south by Manitoba, Saskatchewan, Alberta, and British Columbia, and west by Yukon. It embraces an area of about 500,000 square miles. The eastern part is drained chiefly by the Phelon River into Hudson Bay, and the central and western parts by the Mackenzie into the Arctic Ocean. Nearly the entire region slopes toward the north and the surface is generally low. Numerous swamps and lakes abound, including Great Bear, Aylmer, Mackay, and Great Slave lakes. The valleys of the Coppermine, Great Fish, and Mackenzie rivers have extensive forests of pine, birch, spruce, tamarack, and aspen poplar. The minerals include salt and coal, both of which are found in the region of Great Slave Lake. Lumbering and furring are the chief industries, but agriculture is not practicable, except in a comparatively small region, owing to the short summers and long and severe winters. The settlements are confined mainly to the valley of the Mackenzie. Since the region is sparsely settled, organized civil administration is impracticable, and the government is exercised largely through the northwest mounted police. Population, 1922, 5,950.

MACKENZIE, Alexander, statesman, born in Perthshire, Scotland, Jan. 28, 1822; died April 17, 1892. He studied at Dunkeld and Perth and in 1842 settled at Kingston, Ontario, where he became a builder and contractor. In the meantime he contributed to various periodicals, and in 1852 became editor of the *Lambton Shield,* a Liberal newspaper at Sarnia. In 1861 he was elected to the Parliament of Ontario and six years later became a member of the Dominion Parliament, where he became recognized as a leader in the reform movement. In 1873 he succeeded Sir John Macdonald as Premier and as such supported many internal improvements. He retired from the leadership of his party in 1878, but remained influential in public affairs until his death. Queen Victoria offered him the honor of knighthood, but this he refused to accept.

MACKENZIE, Sir Alexander, explorer, born in Iverness, Scotland, in 1755; died March 12, 1820. He removed to Canada in his youth, where he entered the service of the Northwest Fur Company. For eight years he was stationed on Lake Athabasca, at Fort Chippewyan, and there formed a project of exploring the region to the Arctic Ocean. In 1789 he started with a party of twelve men and explored to its mouth the Mackenzie River, which was named after him. He made a second expedition from Fort Chippewyan in 1792 and 1793 and in the latter year reached Fort Menzies, on the Pacific Ocean. In 1801 he returned to England, where he published an account of his voyages from Montreal to the Pacific Ocean.

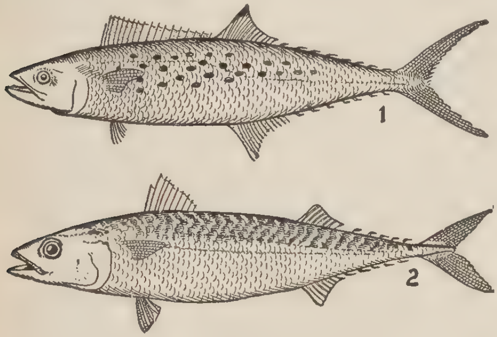
MACKENZIE, Sir Alexander Campbell, musician, born in Edinburgh, Scotland, Aug. 22, 1847. In 1857 he was sent to Germany to take a complete musical course, remaining there till 1862, and, after studying the violin in London, he returned to Edinburgh as a teacher of the pianoforte. In 1888 he became principal of the Royal Academy of Music at London, and in 1893 was made conductor of the Philharmonic Society. His musical works embrace a large variety of compositions, the first noted production being "Colomba," which became popular at Drury Lane in 1883. Other productions include "Bethlehem," "Bride," "Jason," "Troubadour," and "Cotter's Saturday Night."

MACKENZIE, Sir Morell, physician and specialist, born in Leytonstone, England, July 7, 1837; died in London, Feb. 13, 1892. He studied at the London University, and took additional work at Paris and in Budapest. He founded the hospital for diseases of the throat at Golden Square, London, in 1863, and about the same time obtained a prize from the Royal College of Surgeons for his essay on "Diseases of the Larynx." Soon after he was appointed as an assistant physician in the London Hospital, became head physician there in 1873, and held the position of lecturer on diseases of the throat until his death. Queen Victoria knighted him in 1887 for rendering efficient service during the last illness of Emperor Frederick of Germany. He received distinguished honors from many foreign countries and was a corresponding member of several celebrated medical associations. He published "Fatal Illness of Frederick the Noble," "Diseases of the Throat and Nose," and "Hygiene of the Vocal Organs."

MACKENZIE, William Lyon, journalist and statesman, born in Dundee, Scotland, March 12, 1795; died Aug. 28, 1861. He received an elementary education, became clerk to a canal company, and in 1820 emigrated to Canada. In 1824 he established the *Colonial Advocate* at Queenstown, but soon after removed his office to Toronto, where his printing presses were destroyed by those who opposed his criticisms of the government. He was elected to the Legislature of Upper Canada in 1828, but for alleged libel on the ministry was expelled five times, only to be reëlected each time, until the government refused to issue another writ of election. In 1832 he went to England, where he presented a petition of grievances to the government, and by this means secured a veto of the Upper Canada bank bill and a dismissal from office of the Attorney-General. On returning to Canada, he was chosen the first mayor of Toronto, and was again elected to the Legislature.

In 1837 he published a manifesto that virtually declared the independence of Canada, and through his defiance of the government instigated a rebellion. It was his purpose to arrest the Governor and declare Canada a republic, but the government sent a superior force against him and he fled to Navy Island, in the Niagara River, where he undertook to gather a force with which to invade Canada, but his plans were defeated by the opposition of Gen. Winfield Scott of the United States army. He was made a prisoner and confined in the Rochester jail, and after gaining his liberty became a contributor to the New York *Tribune.* A proclamation of amnesty was issued in 1849 and pardon was granted to all connected with this rebellion, hence he returned to Canada and was again elected to Parliament. Many of the reforms advocated by him, which included chiefly the organization of the Dominion of Canada, have since been consummated.

MACKEREL (măk′ẽr-e̤l), an excellent food fish, widely distributed, particularly abundant in the North Atlantic. It attains a length of from twelve to eighteen inches, weighing about two pounds. The color is steel blue with blackish markings above and silvery beneath. Usually these fish are caught in drift nets which reach about twenty feet below the surface. The mackerel move in schools, are carnivorous, feeding chiefly on the fry of other fish, and are caught mostly when coming toward the shore for the purpose of spawning. The most extensive fisheries in America are off the coast of New England, where the *common mackerel* is very abundant. A species known as the *Spanish mackerel* is found in the Mediterranean, where it is caught in large numbers.



1, SPANISH MACKEREL.
2, COMMON MACKEREL.

McKIM (må-kĭm'), **Charles Follen,** architect, born in Chester County, Pennsylvania, Aug. 24, 1847. He studied at Harvard University and subsequently went to Paris, where he took a course of instruction at the Ecole des Beaux-Arts. On returning to the United States, he became connected with Stanford White and W. R. Mead, and was instrumental in doing much to improve architecture. Among the buildings designed by him are the Boston Public Library, the Agricultural Building of the Columbian Exposition in Chicago, and the Bowery Savings Bank of New York. He aided in making plans for the Library and Hall of Fame of New York University and the Madison Square Garden, and carried out a vast plan of improvement in Washington, D. C. His architecture is commendable for being characterized by large monumental effects, which are beautified by adaptation from the classical Renaissance styles. He died Sept. 14, 1909.

MACKINAC (măk'ĭ-nạ), or **Mackinaw,** a strait that connects lakes Michigan and Huron. The island of Mackinac is located in the strait, about three miles east of Saint Ignace, county seat of Mackinac County, Michigan, and is about two miles in width and three in length. The city of Mackinac is situated on the island. It has a good harbor and is noted as a favorite summer resort. Formerly a military post known as Fort Mackinac was maintained on an eminence 300 feet above the city of Mackinac, which was captured by Pontiac in 1669 and taken by the British in 1812. Mackinac remained a village until 1900, when it was chartered as a city. Population, 1920, 483.

McKINLEY (må-kĭn'lĭ), **Mount,** an elevated peak in the south central part of Alaska, 150 miles north of Cook Inlet. The summit is covered with snow perpetually and around the slopes are numerous glaciers. It is elevated 20,464 feet above the sea, hence is the highest peak of North America.

McKINLEY, William, twenty-fourth President of the United States, born at Niles, Ohio, Jan. 29, 1843; died Sept. 14, 1901. He descended from Scotch-Irish ancestors, on the side of his father, William McKinley, and Scotch-German by his mother, Nancy Campbell Allison. When nine years of age, his parents settled at Poland, Ohio, where he attended the public school and Union Seminary. In 1860 he entered Alleghany College, Meadville, Pa., but left the institution on account of overstudy and failing health. After teaching school a short time, he enlisted in the Union army, in 1861. He served throughout the war and attained the rank of captain with the brevet of major. His service was especially gallant at Antietam, Fisher's Hill, and Cedar Creek. In 1865 he resigned his commission, studied law in the Albany Law School, and was admitted to the bar in 1867, beginning the practice of law in Canton, Ohio. Stark County was Democratic, but Major McKinley was elected to the position of prosecuting-attorney in 1869, though two years later he was defeated. In 1876 he was nominated by the Republicans for Congress and was elected, holding the position until 1882, when he was defeated, but was again elected in 1884. He remained in the Lower House of Congress consecutively until 1890, when he was defeated for reëlection.

WILLIAM M'KINLEY.

Major McKinley was elected Governor of Ohio in 1891, was reëlected to the same position in 1893, and in 1896 he was nominated by the Republican convention at Saint Louis for the Presidency on the first ballot. At the election he received 7,104,779 popular votes and 271 electors, while W. J. Bryan, his Democratic opponent, received 6,502,925 popular votes and 176 electors. In his political career McKinley was a persistent advocate of a high protective tariff and was the author of the McKinley tariff law, which was passed by Congress in 1890. The main features of that law were the leading tenets of his political doctrine. He was reëlected in 1900 by a large majority, receiving 7,217,677 of the popular votes and 292 votes in the electoral college, while W. J. Bryan, his Democratic opponent, received 6,357,853 popular votes and 155 of the electors.

On Sept. 6, 1901, while President McKinley was attending the Pan-American Exposition in Buffalo, N. Y., he was shot twice by an anarchist named Leon Czolgosz (q. v.). The wounds inflicted were mortal, the president dying in Buffalo eight days after the assassin's hand was laid upon him. On Oct. 29, 1901, the assassin was executed, after a trial in Buffalo. Among the important events of President McKinley's administrations are the annexation of the Hawaiian Islands and Porto Rico, the Spanish-American War, the war in the Philippines, the independence of Cuba, and the adoption of the single gold monetary standard in 1897. Both as a writer and speaker he was tactful, efficient, and convincing. His addresses and public documents bear the marks of sincerity and conservatism. He was buried at Canton, Ohio, where he resided many years, and was deeply mourned by the nation. A fine monument was erected through general subscriptions at Canton and dedicated with imposing ceremonies in 1908.

MACLAREN, Ian. See **Watson, John.**

McLAREN (mȧ-klăr'ẹn), **Willam Edward,** clergyman, born in Geneva, N. Y., Dec. 13, 1831; died Dec. 19, 1905. He studied at Jefferson College, where he graduated in 1851, and soon after engaged in newspaper work at Pittsburg and Cleveland. Later he studied theology at the Allegheny Presbyterian Theological Seminary, from which he graduated in 1860, and soon after went as a missionary to Bogotá, South America. On returning to the United States, he filled pastorates in Pittsburg and Detroit, and in 1872 became a rector of a Protestant Episcopal Church in Cleveland, Ohio. He was made bishop of Illinois in 1875 and later presided over the diocese of Chicago. In 1883 he founded the Western Theological Seminary at Chicago, and established at Sycamore, Ill., the Waterman Hall, a school for girls. His books include "The Practice of the Inner Life," "The Essence of Prayer," "Inner Proofs of God," and "Analysis of Pantheism."

McLAURIN (măk-lạ'rĭn), **Anslem Joseph,** public man, born in Brandon, Miss., March 26, 1848. He spent his boyhood on the farm and attended the rural schools. Later he studied at the Summerville Institute. In 1864 he entered the Confederate army, but returned to Summerville to complete a course of study, and was admitted to the bar in 1868. He began the practice of law at Brandon and was elected to the Legislature in 1879, where he became prominent as a factor in State politics. In 1894 he was elected to the United States Senate for an unexpired term and the next year was chosen Governor of Mississippi. He was again elected to the United States Senate in 1900 and was reëlected in 1906. In Congress he was a leader of the minority. He died Dec. 22, 1909.

McLEAN (măk-lān'), **John,** jurist, born in Morris County, New York, March 11, 1785; died in Cincinnati, Ohio, April 1, 1861. He was the son of a farmer, studied law, and was admitted to the bar in 1807, settling for practice at Lebanon, Ohio. He served in Congress from 1812 to 1816, was elected to the Ohio supreme court in the latter year, and in 1822 became commissioner of public lands. President Monroe appointed him Postmaster-General in 1823. He was retained in the same position by John Quincy Adams, and was made an associate justice of the United States Supreme Court by President Jackson in 1830. In the Dred Scott Decision he dissented from the opinion of the court as given by Chief Justice Taney. In 1848 he went from the Democrats over to the Free Soil party, and was mentioned as a candidate for President in the Republican conventions of 1856 and 1860. His writings include "Eulogy on James Monroe."

MACLISE (mȧk-lēs'), **Daniel,** painter, born in Cork, Ireland, Jan. 25, 1811, died in London, England, April 1, 1870. He was of Scotch extraction, entered the London Royal Academy in 1828, and made his first exhibit of pictures at the British Institution in 1833. His works include many excellent mural paintings and other products of fine finish, many of which have been engraved and are familiarly known. Among the most famous are "All-Hallow Eve," "Banquet Scene in Macbeth," "Shakespeare's Seven Ages," "Death of Nelson at Trafalgar," "Meeting of Wellington and Blücher after the Battle of Waterloo," "Caxton Printing Office," and "Scene from Twelfth Night."

MACLURE (mȧk-lūr'), **William,** geologist, born in Ayr, Scotland, in 1763; died at Saint Angel, Mexico, March 23, 1840. In 1796 he emigrated to America and subsequently made the United States his home. He became a commissioner to France in 1803 to adjust certain spoliation claims held by citizens of the United States on account of losses incurred in the French Revolution, and while there equipped himself for geological enterprises. After returning to America, he engaged in a private geological survey, visiting most of the states and territories, and later published a geological map and valuable data. He became president of the Academy of Natural Sciences in 1818, serving in that capacity until his death. In 1819 he visited Spain with the view of encouraging the founding of an agricultural college, and shortly before his death made a trip to Mexico for his health.

MACMAHON (mȧk-mȧ-ôn'), **Marie Edme Patrice Maurice,** statesman and soldier, born in Sully, France, June 13, 1808; died at Montcresson, Oct. 17, 1893. He descended from an Irish Catholic family, was educated at the military school at Saint Cyr, and engaged in the expedition to Algeria, distinguishing himself in the attack on Constantine in 1837. In 1852 he became a general in the army, took an efficient part in the Crimean War, especially in assaulting the Malakoff tower at Sebastopol, and was appointed senator in 1856. In the Italian campaign of 1859 he was equally efficient, because of which he became a marshal of France and was created Duke of Magenta. He commanded in the defense of Alsace in 1870 against an attack by a large force. The German army under the Crown Prince of Prussia defeated him in the Battle of Wörth, and at Sedan again defeated his force of 120,000 men and took MacMahon and Napoleon prisoners of war. He became commander of the army that suppressed the Commune in 1871, and, after the overthrow of Thiers, in 1873, he was chosen president of the republic. At heart MacMahon was a monarchist, but faithfully observed his oath in preserving the republic. After the elections of 1878 he was compelled to resign, the resignation taking effect Jan. 30, 1879. After retiring from the presidency, he resided on his estate at Montcresson.

McMASTER (măk-mȧs'tẽr), **John Bach,** historian, born in Brooklyn, N. Y., June 29, 1852. He studied in the public schools and graduated at the College of the City of New York in 1872, after which he became a civil engineer. In 1877 he was made instructor in civil engineering at Princeton, where he taught successfully until 1883, when he was chosen professor of American history at the University of Pennsylvania. He is known best by his extensive historical work entitled "History of the People of the United States," of which the first volume was issued in 1883. It is written in a narrative style and gives evidence that its author devoted much time to careful research in its preparation. Other writings include "School History of the United States," "Benjamin Franklin as a Man of Letters," "Bridge and Tunnel Centers," "High Masonry Dams," "Origin, Meaning, and Application of the Monroe Doctrine," and "Daniel Webster."

McMILLIN, Benton, public man, born in Monroe County, Kentucky, Sept. 11, 1845. After receiving an academic education, he studied law and was admitted to the bar. In 1874 he was elected to the Legislature of Tennessee. For twenty years he was a member of Congress, beginning in 1879, and was elected Governor of his State in 1899. He was reëlected two years later. In the 55th Congress he was a member of the Committee on Rules.

McMONNIES (măk-mŭn'nĭz), **Frederick,** sculptor, born in Brooklyn, N. Y., Sept. 28, 1863. He first studied sculpturing under Augustus Saint Gaudens and in 1884 went for further training in Paris, France. In 1889 he made an exhibit of a splendid production known as "Diana" at the Salon. Two years later he received the first medal ever granted to an American sculptor in France. His works are numerous, the most noted being "Faun with Heron," "Fountain at the Columbian Exposition," "Shakespeare," "Bacchante with Infant Faun," "Victory," and "Sir Harry Vane."

MACOMB (mȧ-kōm'), a city and the county seat of McDonough County, Illinois, 185 miles southwest of Chicago, on the Chicago, Burlington and Quincy Railroad. It is surrounded by a fertile farming country. Among the principal buildings are the county courthouse, the public library, and the Western Illinois State Normal School. It has manufactures of tile, earthenware, and machinery. Large deposits of fire clay are found in the vicinity. It was settled about 1840 and incorporated in 1857. Population, 1900, 5,375; in 1920, 6,714.

MACOMB (mȧ-ko͞om'), **Alexander,** soldier born in Detroit, Mich., April 13, 1782; died June 25, 1841. He entered the army at an early age and at the beginning of the War of 1812 was adjutant general. Later he was appointed colonel of artillery and in 1813, for distinguished service at Fort Niagara and Fort George, was promoted to be brigadier general. In 1814 he defeated a force of British under General Prevost at Plattsburg, near Lake Champlain, for which he received the thanks of Congress and a gold medal. He served as colonel of engineers from the close of the war until 1828, when he became commander in chief of the United States army. He published "A Treatise of the Practice of Court-Martials."

MACON (mā'kŭn), a city of Georgia, county seat of Bibb County, on the Ocmulgee River, 94 miles southeast of Atlanta. It is on the Southern, the Central of Georgia, the Macon and Birmingham, and other railroads. The chief buildings include the county courthouse, the public library, the Mercer University, the Wesleyan Female College, the Mont de Sales Academy, the State Academy for the Blind, and the Federal building. Among the manufactures are cotton and woolen goods, clothing, lumber products, machinery, brass and iron wares, brick, sewer pipe, and utensils. The municipal facilities include pavements, electric lights, street railways, and waterworks. It has a large trade in cotton, produce, and general merchandise. Macon was settled in 1822 and incorporated in 1823. Population, 1900, 23,272; in 1920, 52,995.

MACON, a city of Missouri, county seat of Macon County, 70 miles southwest of Quincy, Ill., on the Wabash and the Chicago, Burlington and Quincy railroads. The surrounding country is a fertile section and has deposits of bituminous coal. Among the noteworthy buildings are the county courthouse, the high school, the county insane asylum, and a number of churches. It has manufactures of flour, brick, cigars, ironware, and machinery. The city has public waterworks and a sanitary sewer system. Population, 1900, 4,068; in 1920, 3,549.

MACON, Nathaniel, statesman, born in Warren County, North Carolina, Dec. 17, 1757; died there June 29, 1837. After securing an elementary education, he entered the Revolutionary War as a private soldier. He served in the State Legislature from 1780 until 1786 and was a member of Congress from 1791 to 1815, being speaker of the House from 1801 to 1807. In 1815 he was elected to the United States Senate from North Carolina, serving in that capacity a period of thirteen years. His total service in Congress covers a period of 37 years and is distinguished for efficiency and honesty of purpose. Politically he affiliated with the Democrats.

MACPHERSON (măk-fẽr'sŭn), **James,** author, born in Ruthven, Scotland, Oct. 27, 1736; died there Feb. 17, 1796. After graduating at King's College, Aberdeen, he engaged in school teaching in his native town, but in the meantime contributed to the *Scots Magazine,* and in 1758 published a poem entitled "The Highlander." In 1760 he made public many verses that are reputed to be translations from the Gaelic verse, and subsequently a subscription was raised which enabled him to make a tour through the portions of Scotland occupied by the Gaelic race. In 1762 he published six volumes, entitled "Fingal," an epic poem. These and others excited marked attention, but their genuineness was questioned, and many critics regarded them as purely imaginative. Macpherson was elected to Parliament in 1780, where he held a seat for ten years, and subsequently retired to his estate in Inverness-shire. His remains were brought to England and interred at Westminster Abbey.

McPHERSON, James Birdseye, general, born in Sandusky County, Ohio, Nov. 14, 1828; slain in battle near Atlanta, Ga., July 22, 1864. In 1853 he graduated at the head of his class from the West Point Military Academy, became an instructor there, and subsequently served as engineer at New York harbor. At the beginning of the Civil War he was stationed in California, but soon after was transferred to the staff of General Halleck and was promoted to the rank of lieutenant colonel. He distinguished himself with General Grant at forts Henry and Donelson, took part in the Battle of Shiloh and the siege of Corinth, and in 1863 commanded the seventeenth army corps. General Grant recommended his promotion to the rank of brigadier general after the Vicksburg campaign, and in 1864 he accompanied General Sherman in the Atlanta campaign. While superintending his troops he was shot and death followed almost instantly. General McPherson was a skillful soldier and an able tactician. His gentle manners made him universally popular.

MACREADY (măk-rē'dĭ), **William Charles,** tragedian, born in London, England, March 3, 1793; died at Weston-Super-Mare, Somersetshire, April 29, 1873. He studied at Rugby and was intended for the law, but later decided to go on the stage, making his first appearance at Birmingham in 1810. Later he appeared successfully at London in "Richard III." and several other Shakespearean plays, visited Canada and the United States in 1826, and afterward made extended tours through continental Europe. His second visit to America was in 1843 and his third in 1848. While playing in Astor Place during the latter visit a riot resulted, in consequence of a misunderstanding between himself and Edwin Forrest.

McREYNOLDS, James Clark, public man, born at Elkton, Ky., Feb. 3, 1862. He graduated at Vanderbilt University, practiced law successfully, and in 1903 was appointed Assistant Attorney-General of the United States. In 1913 he entered the Cabinet of President Wilson as Attorney General; he resigned in 1914.

MACVEAGH (măk-vā), **Wayne,** lawyer and statesman, born in Phoenixville, Pa., April 19, 1833; died Jan. 11, 1917. He was admitted to the bar in 1856, and became captain of cavalry in 1862. From 1870 to 1871 he was minister to Turkey, served as chairman of a commission appointed by President Hayes in 1877 to investigate affairs in Louisiana, and in 1881 became Attorney-General of the United States. In 1893 he was appointed minister to Italy.

MADAGASCAR (măd-à-găs'kär), an island in the Indian Ocean, off the southeastern coast of Africa, separated from that continent by the Mozambique Channel. It ranks as one of the largest islands in the world. The length from northeast to southwest is 975 miles, the breadth at the widest point is 356 miles, and the area is 228,500 square miles. Much of the surface is elevated, the average height above sea level being about 3,500 feet, and the highest mountain ranges approximating 9,000 feet. The coast regions contain a number of large fertile tracts and few large indentations, but have a number of good harbors. Among the principal rivers are the Mangoka and the Mangoro and the largest inlet is Antongil Bay. The highlands have a temperate climate, with an average of 72°, but some of the coast regions are hot. Excessive rains and extensive marshes render large areas unfavorable to European colonization. The wild animals consist chiefly of lemurs, crocodiles, lizards, chameleons, snakes, and many birds of fine song and plumage.

The productions of Madagascar are various, including principally farm produce, minerals, and fish. Among the products of the farms and gardens are manioc, cacao, sugar cane, rice, coffee, gum copal, vanilla, and many kinds of tropical fruits. Other products include India rubber, lumber, cattle, hides, silk, and sweet potatoes. The forests are abundant and yield many valuable woods, including numerous species of palms, and occur most extensively in a circle around the entire island and some distance from the coast. Among the minerals are iron, copper, lignite, galena, gold, graphite, sulphur, and various building stone. The chief manufactures include jewelry, carpets, silk goods, cloth, straw work, and lumber products. Roads and wheeled vehicles are being introduced rapidly. A line of railway has been constructed some distance from Antananarivo. At present the total lines of steam railroads aggregate 312 miles. A cable connects the island with Mozambique. Commercial relations are sustained with France, the United States, Germany, England, and other European countries. The principal imports are cotton and woolen goods, ironware, spirituous liquors, tinware, and tobacco.

The natives speak a Malayan language and belong to the Malayo-Polynesian class of people. They include a number of tribes, of which the Hovas are the most powerful, and the several classes are graded differently in civilization and religion. Mission, agricultural, public and normal schools are maintained by the government. Most of the architecture is of frame timber and bamboo, though rapid progress is being made in manual arts, especially in carpentry, weaving, and iron work. The religion is fetichism. Infanticide and polygamy are still practiced to some extent, but superstition is fast giving way to the influence exerted by Christian teachers and missionaries. About 50,000 natives are Roman Catholics and 475,000 are Protestants.

France has laid claim to Madagascar since 1642, but little was done until recent years to establish the claim and develop the natural resources. The earliest information of this island was published by Marco Polo in the 13th century and the Portuguese cruised off its coast in 1506, publishing an account of it in which the name Saint Lorenzo was applied to the island. Radama I. was recognized as the reigning sovereign of the Hova tribe in 1810. He encouraged missionary work and authorized a translation of the Bible into the Malagasy language. At his death, in 1828, his queen, Ranavalona, became ruling sovereign. She resisted the extension of French influence and refused the Christians free access and communication. Her son, Radama II., succeeded to the throne in 1861. He not only admitted missionaries, but encouraged improvements and emancipated the slaves. His liberality caused much dissatisfaction among the natives and was the occasion of his assassination by a native in 1863, when Queen Ranavalona II. ascended the throne. Soon after a war broke out against France, but it terminated in the French being recognized as the rulers of the island and the establishment of a governor general at Diego-Suarez. The queen was formally deposed in 1897 and exiled to Algeria. Antananarivo is the capital. Other trade centers include Mojanga, Tamatave, Antombaka, and Fort Dauphin. Population, 1922, 3,651,762.

MADDER (măd′dẽr), a family of plants, represented by about 4,500 species in the tropical and warmer temperate regions of both hemispheres. They include many herbs, shrubs, and trees, most of which are tropical. The leaves are opposite or whorled, the flowers are greenish-yellow, and the fruit is dark brown or black. Many of the species yield coloring matter and products useful in medicine. The *common madder* of Europe is grown in many parts of the world for its roots, which yield a red dye, including a shade known as *turkey red.* Several species in South America belong to the trees that yield Peruvian bark, from which quinine is extracted. The coffee tree, though native to Abyssinia, is grown extensively in tropical countries. A small tree of Brazil belonging to this family yields the emetic drug *ipecacuanha.* The species common to the United States include the *bluets, bedstraw* and *buttonbush.* Though alizarin was formerly obtained chiefly from madder, this coloring matter is now produced artificially from anthracene. It produces the colors known as Turkish-reds.

MADDER.

MADEIRA (mȧ-dē′rȧ), a large river of South America, the most important tributary of the Amazon. It is formed at the boundary line between Bolivia and Brazil by the confluence of the Guaporé and Mamoré rivers, and after a course of 935 miles joins the Amazon about 98 miles below Manaos. It has a basin of nearly 500,000 square miles, and its total length to the source of the Mamoré is 2,210 miles. At a distance of 715 miles above its mouth are noted falls, the Falls of São Antonio, and above that navigation is impossible, the series of cataracts extending about 225 miles. The Madeira valley and the valleys of its tributaries are exceedingly fertile. They contain vast forests and the most productive rubber regions in the world. The country is being rapidly developed under governamental encouragement. A railroad has been projected around the rapids.

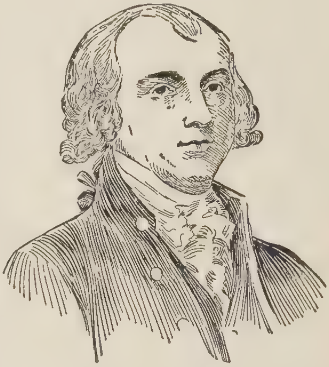
MADEIRA, a group of islands situated about 350 miles northwest of Africa, nearly due west of Morocco. The largest island, Madeira, is named after the group. It has an area of 300 square miles. The area of the entire group is 315 square miles. The surface is diversified by mountain ranges, the culminating peak of which has a height of 6,010 feet. Many small islands are situated adjacent to Madeira, the most important of which are Porto Santo and Deserta Grande. The productions include live stock, cereals, wine, sugar, and tropical fruits. It is noted for the excellence and abundance of its vines, which bear successively for many years. The island group has belonged to portugal since 1431. Portuguese and Moors are the chief inhabitants. Population, 1921, 153,478.

MADISON, a city of Madison County, Illinois, 8 miles north of East St. Louis, on the Illinois Central and other railways. It has steel plants, foundries, and machine shops. The chief buildings include the high school, city hall, and several churches. It was settled and incorporated in 1891. Population, 1920, 4,996.

MADISON (măd'ĭ-sŭn), a city of Indiana, county seat of Jefferson County, on the Ohio River, fifty miles northeast of Louisville, Ky. It is on the Pennsylvania Railroad and several motor bus lines, and has regular steamboat communication. The surrounding country is agricultural and dairying. Among the manufactures are furniture, cotton and woolen goods, engines, steamboats, boilers, and machinery. It has a public library, the Saint Gabriel's Academy, and many fine schools and churches. Waterworks, sewerage, pavements, and Clifty Falls State Park are among the improvements. It is the seat of a large trade in merchandise. Madison was incorporated in 1824. Population, 1900, 7,835; in 1920, 6,711.

MADISON, the capital of Wisconsin, county seat of Dane County, 83 miles west of Milwaukee, on the Illinois Central, the Chicago and Northwestern, and the Chicago, Milwaukee and Saint Paul railroads. It has a beautiful situation between lakes Menona and Mendota, which have been improved by parks and hotels and form a popular summer resort. It is improved by an electric street railway system, public lighting, pavements, waterworks, and sanitary sewerage. Among the principal buildings are the State capitol, the United States post office, the Soldiers' Memorial Hospital, the State asylum, the Carnegie public library, the public high schools, and the University of Wisconsin. The State capitol is a fine structure, erected at a cost of about $7,000,000, and near it is the library and museum building of the Wisconsin Historical Society. This association has a reference library of 425,000 volumes. Other learned societies include the Wisconsin Academy of Sciences, Arts, and Letters, and the Wisconsin Geological and Natural History Survey. Madison is noted for its large interest in social welfare and economic activities.

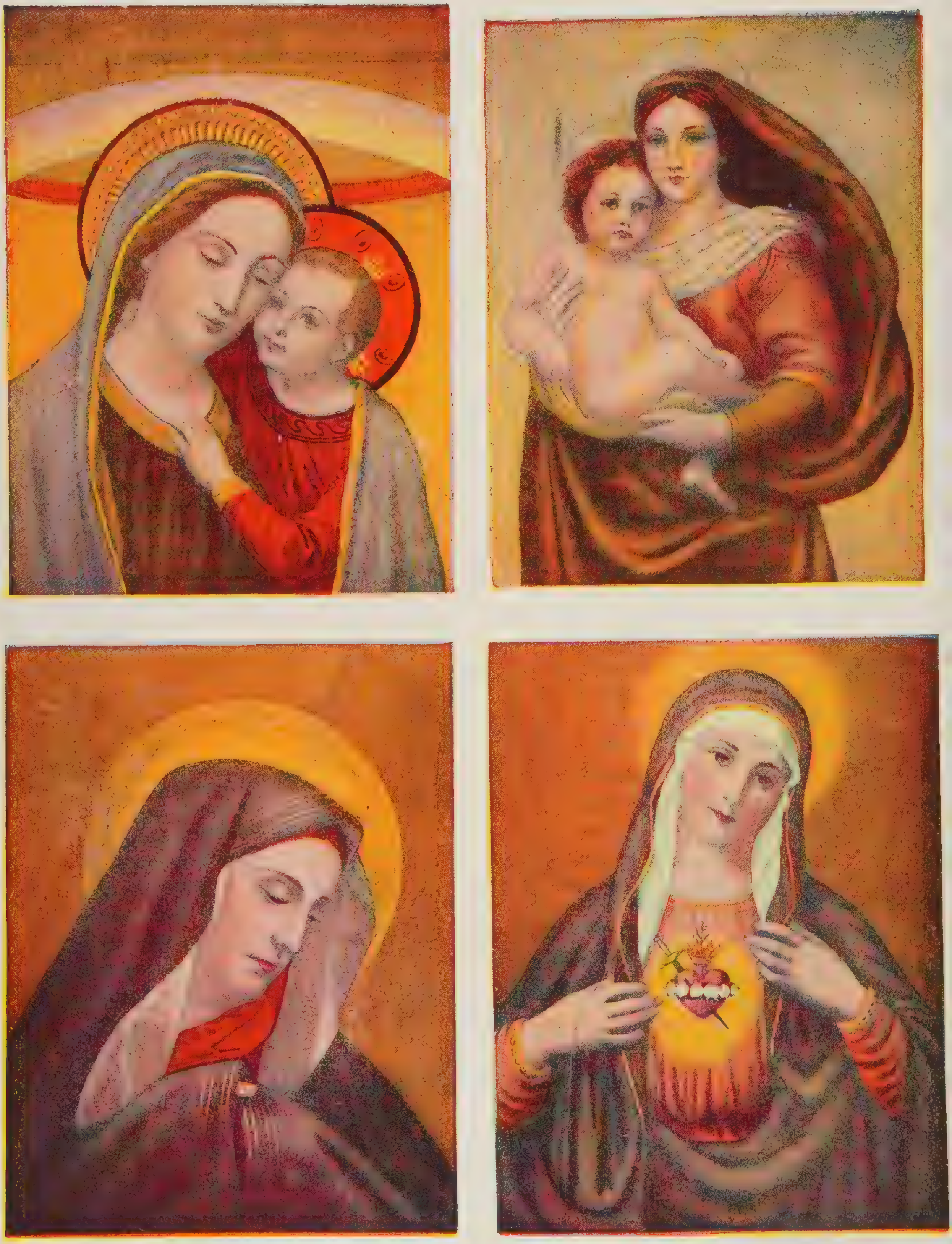
Madison is important as an educational and retailing center. The chief manufactures include flour, machinery, ironware, furniture, batteries, dairy products, shoes, books and stationery, and electrical appliances. It was selected as the site of the State capital in 1836, when Wisconsin was organized as a Territory. Two years later it was named after President Madison, since which time it has been the seat of government and was incorporated in 1856. Population, 1905, 24,301; in 1920, 38,378.



JAMES MADISON.

MADISON, James, fourth President of the United States, born in Orange County, Virginia, March 16, 1751; died in Montpelier, Va., June 28, 1836. He was the son of James Madison, a man of English descent who settled in Virginia at an early period. His early education was by private tutors, and in 1769 he entered Princeton College, where he graduated in 1771, but remained at that institution another year to pursue additional studies under President Witherspoon. Shortly after he was admitted to the bar and began the practice of law in Virginia. In 1776 he was chosen a member of the Virginia Assembly, served on the executive council in 1778, and in 1779 became a member of the Continental Congress, in which body he took an active and prominent part until 1784. The Legislature of Virginia appointed him a delegate to Annapolis, Md., in 1786, to aid in devising a system of commercial regulations for all the states, which body proposed a convention of delegates to be held in Philadelphia in May, 1787. In this convention the Constitution of the United States was framed, and Madison was an influential member of that body. He kept a careful account of its proceedings, which about fifty years afterward was published as the "Madison Papers." In 1788 he wrote a portion of the *Federalist,* and did much by his persuasive and conciliatory spirit to secure the ratification of the Constitution by Virginia.

In April, 1789, Madison took his seat in the House of Representatives of the first Congress that assembled under the Constitution, and continued a member of that body during both terms Washington served in the Presidency. He married Mrs. Dolly Paine Todd of Philadelphia, the widow of a Pennsylvania lawyer, in 1794. He declined the office of Secretary of State



(Opp. 1671)

CELEBRATED MADONNAS.

Our Lady of Perpetual Help.
Dolci's Madonna of the Thumb.

Raphael's Sistine Madonna.
Crellet's Sacred Heart of Mary.

when it was offered to him in 1793, retired from Congress in 1797, and in the following year accepted a seat in the Virginia Assembly, where he wrote the resolutions opposing the Alien and Sedition laws passed in the administration of President Adams. President Jefferson selected him as Secretary of State in 1801, which position he held during both terms of that President, and which he filled with such eminent ability that he was elected as the nominee of the Democratic-Republican party to the Presidency in 1808, receiving 122 electoral votes, while 47 were cast for the Federalist, Charles C. Pinckney, and six for George Clinton. The inauguration took place on March 4, 1809, and in 1812 he was reëlected by receiving 128 electors and DeWitt Clinton, his opponent, receiving 89 votes. He retired to private life on March 4, 1817, and spent the remainder of his days at his home in Montpelier, Va.

Although Madison lived in retirement after 1817, he remained influential in his party and in the country at large. In 1829 he served as a member of the State convention to revise the constitution of Virginia and was president of an agricultural society. Madison was an able statesman, universally respected, but did not possess distinguished power as an orator, and was not particularly vigorous in administrative functions. Among the events of his administration was the War of 1812, which terminated Dec. 14, 1814, by the Treaty of Ghent, but the last battle was fought the following January at New Orleans, General Jackson not having been informed of the peace treaty. He published a number of able papers, the most important being "An Examination of the Doctrine which Subjects to Capture a Neutral Trade not Open in Time of Peace."

MADONNA (må-dŏn′nå), the Italian equivalent for madam, but now applied specially to the Virgin Mary, and in the latter sense used as the English term Our Lady. In 431 the Council of Ephesus declared that the Virgin Mary is the Mother of God, and since that time the title has come to be the name of a great number of pictures in which the Virgin forms the sole or prominent object. These include principally Raphael's "Madonna di Ansidai," Leonardo da Vinci's "Madonna of the Rocks," Raphael's "Sistine Madonna," "Holbein's "Madonna of Burgomaster Meyer," Rubens' "Madonna of the Innocents," Perugino's "Enthroned Madonna and Child," Angelo's "Madonna of Burges," Lochner's "Virgin in the Arbor of Roses," Raphael's "Madonna of the Canopy," Correggio's "Madonna with Saint Francis," Jan van Eyck's "Lucca Madonna," and Murillo's "Madonna."

MADRAS (må-drăs′), a seaport city of India, capital of the presidency of Madras, on the Coromandel Coast of the Bay of Bengal. Madras, the presidency, has an area of 141,726 square miles and a population of 39,826,450. The city has extensive canal and railway connections, is the center of a vast intérior and foreign trade, and contains a well-equipped garrison. Its harbor is not naturally commodious, but has been improved materially by piers, and a splendid lighthouse towers to a height of 125 feet and may be seen a distance of fifteen miles. The manufactures are numerous, but they did not become particularly noteworthy until within comparatively recent times. They consist chiefly of clothing, machinery, earthenware, soap, flour, and canned fish. The principal buildings include the government house, the Scotch Church of Saint Andrew, the Saint George's Cathedral, the Madras Polytechnic Institution, and a large number of Hindu and Mohammedan temples. The English founded Madras in 1639, after obtaining a grant of land from a native prince. It has been affected materially by hurricanes that sweep from the sea over the lower parts of the site during the monsoon period, from May to October. The population consists mostly of Hindus, and about 50,000 Mohammedans and 4,250 Europeans. Brahmanism is the religion of a majority of the people. Population, 1922, 522,972.

MADRID (må-drĭd′), the capital of Spain, in the province of Madrid, on the Manzanares River, a tributary of the Tagus. It has a fine site on a plateau 2,450 feet above sea level, in the geographical center of Spain. The city is connected with the chief cities of Spain and Portugal by railroads and has important commercial and manufacturing enterprises. The extremes in temperature make it quite unhealthful, the rate of mortality being exceedingly large. It has important public institutions, among them many excellent churches, hospitals, libraries, royal academies, public schools, and a splendid university. The royal palace is built of granite. It is a fine structure in the form of a square, 470 feet on each side and 100 feet in height. Its armory is counted among the finest in Europe. The municipal facilities are modern, including stone and asphalt pavements, public lighting and waterworks, and a street railway system. Philip V. founded the national library, which at present contains 600,000 volumes. The university has extended courses of study and an attendance of 6,100 students. The bullfights held annually at the Plaza de Toros, which has a seating capacity for 13,000 spectators, attract vast audiences, spectators coming from many countries of Southern Europe. Other places of amusement and interest are its public parks, promenades, and several museums, including the Royal Museum of Painting and Sculpture.

Madrid was a small fortified town in the 10th century, when it was known as Majoritum. Alfonso VI. captured it from the Moors in 1083. It was made the permanent capital of Spain in 1561, after which it was greatly improved by grading and the construction of government buildings. In 1808 it was the center of the rebellion against the French under Murat. Population, 1920, 571,539.

MADURA (mȧ-dōō′rȧ), a city of India, capital of a district in the province of Madras, 275 miles southwest of Madras. The streets are regularly platted and improved with substantial paving. It has several large market places and a large trade. Among the chief buildings are many Hindu temples, the government houses, and a palace built by Tirumulla Nayak. A number of Christian missions and two colleges are located here. The manufactures include cigars, cotton and woolen goods, clothing, and machinery. It has electric railways, waterworks, and railway transportation facilities. Population, 1922, 138,206.

MADURA, an island in the East Indies, separated from the northeastern coast of Java by a narrow strait. The area is 1,700 square miles. Much of the surface is mountainous and the soil is not very fertile. Salt, petroleum, cattle, maize, tobacco, and fruits are the chief products. It is a possession of the Netherlands and is governed with a number of other islands, the entire territory having an area of 2,060 square miles. Pamekasan is the seat of government. Population, 1922, 1,638,204.

MAELSTROM (māl′strŭm), or **Malström,** a celebrated whirlpool near Moskenäs, one of the Lofoten Islands, off the northwestern coast of Norway. Many legends have been published of large vessels being sunk in the deep, but most of them are fabulous. It is dangerous in winter, when it rages so furiously that its roaring sound is heard many miles. This is also the case when a strong wind blows from the northwest. At those times it is capable of engulfing small vessels which approach it, but ordinarily it can be traversed without danger. The Maelstrom is due to the currents of the Great West Fiord.

MAESTRICHT (mäs′trĭkt), or **Maastricht,** a city of Holland, capital of the province of Limburg, on the Maas River, eighteen miles northwest of Aix-la-Chapelle, Germany. It is connected by important railroads, giving it commercial advantages, and was once a fortress of great strength, but has been reduced to a garrison. It has a fine statue of Charlemagne. A fine stone bridge crosses the river and connects the city with Wijk. The manufactures, educational institutions, and jobbing trade are important. It has pavements, public parks, and electric street railways. The Spaniards captured it in 1579. Population, 1922, 37,502.

MAETERLINCK (mä′tẽr-lĭn̲k), **Maurice,** poet and essayist, born in Ghent, Belgium, Aug. 29, 1862. He first studied in a Jesuit school and subsequently took a course in philosophy and law. In 1886 he was admitted to the bar. He removed to Paris in 1896 and devoted his attention to literature, especially the writing of poems and dramas. Several of his plays were translated into English by Richard Harvey. His productions include "Monna Vanna," "The Intruder," "The Blind," and "The Princess Maleine." He is the author of many essays that have been widely read, including "Wisdom and Destiny," "The Life of the Bees," and "The Treasure of the Humble."

MAFEKING (mä-fā̇-kĭng′), a town of South Africa, in the Bechuanaland Protectorate, near the border of the Transvaal Colony, 95 miles northeast of Vryburg. It has railroad facilities and a growing trade in produce and merchandise. The place became noted in 1899, during the Anglo-Boer War, when Colonel Baden-Powell was besieged here by a force of Boers under General Cronje. The Boers had planned to capture the British force at this place, but Colonel Mahon came to the relief with a British column.

MAFIA (mä′fē̇-ȧ), a secret society of Sicily, whose aim is to substitute its own authority for that of the law. It exercises a powerful influence in the social and political affairs in the island and the southern part of Italy, and branches have been founded by Italian immigrants in New York, New Orleans, and other cities of the United States. Among the objects are to control elections, obtain employment for the members, and protect those belonging to the society against the officers of the law. In 1890 the branch society in New Orleans became involved in considerable trouble, since it was thought to be the cause of the death of the chief of police. Eleven of the members were put in jail, but they were taken out and murdered by a mob. This involved the United States in diplomatic complications with the government of Italy, but the matter was settled by a payment of indemnity by the United States to the relatives of the victims.

MAGDALENA (mäg̅-dȧ-lā̇′nȧ), a river of South America, rises in the southern part of Colombia. It flows nearly north and discharges into the Caribbean Sea by a delta below Barranquilla. The Cauca is its principal tributary, which rises about ten miles from the source of the Magdalena and joins it near 9° north latitude. Other streams flowing into it include the Bogotá and Sogamoso rivers. The Magdalena has a length of 975 miles and is navigable to Honda, 450 miles from its mouth. Above that point is a series of rapids. However, they have been paralleled by a line of railway, by which connection is afforded with the navigation in the upper course. The delta of the Magdalena includes 3,000 square miles.

MAGDALENE (măg-dȧ-lē′nē̇), **Mary,** a woman mentioned in the New Testament as a native of the town of Magdala, near Tiberias, and who ministered to the physical wants of Jesus. It is related that seven devils were cast from her, that she witnessed the crucifixion, and that she was among the first who came to the sepulcher on the first Easter with sweet spices. She was the first to see Christ after the resurrection. Mary Magdalene has been mentioned erroneously as the one who anointed the feet of Jesus with ointment, but that distinction is due to Mary, the sister of Martha and Lazarus.

MAGDALEN ISLANDS (măg'dȧ-lĕn), a group of islands in Canada, located near the center of the Gulf of Saint Lawrence, belonging to Quebec. They are about fifty miles northwest of Cape Breton Island. The surface is made up largely of rocky cliffs, but they contain considerable land suitable for agriculture. The inhabitants engage chiefly in the herring, cod, and seal fisheries. In winter the sea freezes to the extent that communication with the outer world is shut off for four months, except by telegraph. Population, 1922, 5,120.

MAGDEBURG (mäg'de̤-bo͝org), a city of Germany, capital of Prussian Saxony, noted as a strong fortress. It is located on the Elbe River, 75 miles southwest of Berlin, with which it is connected by railways. The river navigation and canal improvements, together with its numerous railroads, make Magdeburg an important jobbing center. It has many educational institutions, including a fine public school system, two normal schools, two gymnasia, institutions for the dumb, blind, and deaf, and several industrial training schools. The Cathedral of Saints Maurice and Catharine, founded in 1208, is one of the most noted ecclesiastical buildings in Europe. It contains the graves of many noted sovereigns, among them Emperor Otho, the founder of the city. Other noteworthy buildings include the Church of Our Lady, the Church of Saint Paul, the public library, the city hall and courthouse, the commercial exchange, and the public museum. It has manufactures of gloves, leather, vinegar, cotton and woolen goods, silk fabrics, ribbons, machinery, pottery, and musical instruments. Wallenstein laid siege to Magdeburg for seven months in the Thirty Years' War, but in 1631 it was captured by Tilly, who not only sacked it, but caused the death of 30,000 of its people. In 1808 it became a part of France, but was returned to Prussia in 1814 by the Treaty of Paris. Most of the inhabitants are Protestants. Population, 1920, 279,685.

MAGELLAN (mȧ-jĕl'la̤n), or **Magalhães, Ferdinand,** eminent navigator, born in Oporto, Portugal, in 1470; slain in the Philippine Islands, April 27, 1521. He descended from a respectable family, spent his youth under the direction of Queen Leonora, consort of John II. of Portugal, and received a liberal training. It was his ambition to reach the Moluccas by sailing westward and, with that end in view, he prevailed upon Charles V., King of Spain, to aid him in undertaking such an enterprise. On Aug. 10, 1519, his expedition of five ships sailed from San Lucas and, after crossing the Atlantic, a safe landing was effected at the mouth of the La Plata River in South America. The expedition next took a course southward along the coast of Patagonia, discovered Magellan Strait, and, after passing through it, reached the ocean west of South America, which he named the Pacific because of the quiet aspect of its waters when first seen by him. Continuing in a course toward the west, the expedition reached the East Indies, effecting a landing on the Philippine Islands, to which he made a formal claim in the name of Spain. His authority was resisted by the natives, and, after endeavoring to persuade them to embrace Christianity, he was slain in an attack made upon a company then upon the shore. On Sept. 6, 1522, more than three years after the expedition left Spain, Capt. Sebastian del Cano reached San Lucas and told the story of mingled triumph and tragedy. This expedition was the first to make a complete tour around the earth.

MAGELLAN, Strait of, the channel which separates the island of Tierra del Fuego from the continent of South America. It is from two to seventy miles wide and about 350 miles long, and forms a connection between the waters of the South Pacific and the South Atlantic. Its navigation is endangered by numerous islands. The name was applied in honor of Ferdinand Magellan, who discovered it and sailed through it in 1520. On its shores are thousands of aquatic birds, including ducks, geese, gulls, penguins, cormorants, and oyster catchers.

MAGENTA (mȧ-jĕn'tȧ), a town of Italy, in the province of Milan, on a railway line about seventeen miles west of Milan. It is noted as the scene of a celebrated battle on June 4, 1859, between the Austrians and French. The latter were commanded by Marshal MacMahon, who defeated the Austrians under command of Count Gynlai. It is estimated that the French lost 5,000 men and the Austrians about 10,000. MacMahon was soon after created Duke of Magenta.

MAGGIORE (mȧd-jō'rȧ), a lake on the boundary between Switzerland and Italy, but situated mostly in the latter country. It has a length of forty miles. The average breadth is about four miles and the greatest depth is nearly 1,500 feet. It is thought that its origin is from volcanic action. Fine vineyards and fertile fields surround the lake, but adjacent to its northwestern coast are mountains of solid granite. In its vicinity are several prosperous towns, including Magadino and Lacarno, in Switzerland, and Cannobio, Luino, Bavino, and Pallanza, in Italy.

MAGI (mā'jī), a name first mentioned by the prophet Jeremiah, in connection with an officer of Nebuchadnezzar, and afterward applied by Herodotus to one of the six Median tribes. Subsequently the Magi became an hereditary priestly caste of the Medes and Persians, who were regarded the servants of God and the preservers and propagators of sacred rites and traditions. This priestly caste had much influence in the affairs of individuals and of the state, and, besides conducting religious worship, had charge of the educating of princes and nobles. In the time of Zoroaster the Magi were reformed and disciplined, but later they declined in influence until they developed into magicians and fortune tellers. The name magi is given to the three wise men who came from the East to worship the infant Jesus.

MAGIC, the alleged art of exercising supernatural powers by calling into activity the spirits of departed beings, or employing enchantment, sorcery, and witchcraft. Superstition and belief in magical arts date from remote history, and, after passing through the various centuries, it is still adhered to among the unlearned Gypsies and other classes, who reap a rich harvest by acting upon the credulity of superstitious people. *Natural magic* is the name applied to the art of utilizing natural causes to produce effects apparently supernatural.

MAGIC LANTERN, or **Stereopticon,** an instrument invented by a German Jesuit, Athanasius Kircher, in 1645. It consists of a case or box in which the scattered rays of some powerful light are confined and made to pass through a tube. A concave reflector put opposite the tube, back of the lamp, aids in condensing the light and directing it through the tube, in which powerful lenses are arranged to condense the diverging rays upon paintings on glass, which slide in a sort of stage, and another object glass throws the image of the highly illuminated object upon a white wall or screen, the focus being adjusted by sliding this lens nearer to or farther from the object. The best effects are secured in a room which is highly darkened, but the size and beauty of the pictures cast upon the screen depend upon the distance of the object from the lenses, the position and character of the lenses, and the power of the light. A brilliant picture twenty feet in diameter may be secured from a slide three inches in diameter under a powerful light. To appear erect upon the screen, the picture slides must be inserted into the tube in an inverted position. Recently vast improvements have been made in the magic lantern by discarding the oil lamp and substituting for it oxy-hydrogen and electric lights. A very beautiful effect is secured by what is known as *dissolving views*. It involves having two reflectors so placed that the images of two pictures are thrown at the same time on the screen, causing one to fade or melt into the other. See **Kinetoscope.**

MAGNA CHARTA (măg'nȧ kär'tȧ), or **Great Charter,** an important document in British history, forming a part of the Constitution of Great Britain, and regarded as a basic guarantee of liberty. It was extorted by the people of England from King John at Runnymede, June 15, 1215. This document was brought about by the tyranny and oppression practiced by the Norman kings under the feudal system, on account of which the barons rose up with the hearty support of the people in their demand for reformatory measures. Among the reforms guaranteed were included the protection of property, liberty, and life against arbitrary kings. The barons were accorded certain privileges that tended to secure the proper enforcement of civil rights and social freedom. Other measures embodied in the Magna Charta include the regulations of the business of traders, those in regard to the church, and those in relation to freemen generally, especially the protection guaranteed under a jury system. Several successors of King John confirmed the Great Charter and Edward I. embodied it in the statutes. The essential principles have been confirmed by many decisions of the courts and acts of Parliament.

MAGNESIA (măg-nē'zhĭ-ȧ), an earthy powder. It is a tasteless white powder and possesses alkaline properties. Magnesia is used in medicine as a laxative and, administered in small doses, its acts as an antacid. Pure magnesia is obtained by exposing hydrated carbonate to a red heat. Treated in this way, it forms the pure commercial article known as calcined magnesia.

MAGNESIUM (măg-nē'zhĭ-ŭm), a mineral of wide distribution, constituting a silver-white metallic element. It may be obtained by reducing magnesium chloride with metallic sodium, or by the electrolysis of fused magnesium chloride. At an ordinary temperature it is more brittle than silver, but becomes malleable when the temperature is increased, and may be formed into wire or ribbon. Its silver-white color is preserved in dry air, but when exposed to moisture it becomes tarnished. When heated in the flame of a candle, or in oxygen gas, it burns with a dazzling light. It is rich in chemical, actinic rays, a property that has led to its use in photography, but more recently the electric light has been utilized in its stead. In an atmosphere of carbonic acid gas it decomposes the gas in burning, constitutes magnesic oxide, and forms the carbon into a powder. Calcined magnesia is obtained by reducing magnesium to ashes. Magnesium deposits occur extensively in various metals, in serpentine rock, meerschaum, soapstone, asbestos, and other minerals.

MAGNET (măg'nĕt). See **Magnetism.**

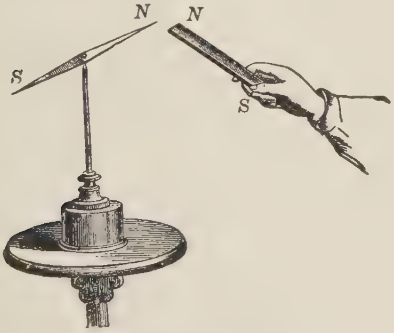
MAGNETISM (măg'nĕt-ĭz'm), the science that treats of the laws and conditions of magnetic force. The name was coined from Magnesia, a town in Asia Minor, near which a black mineral known as loadstone is found embedded with iron ore in volcanic rock. This mineral is widely distributed, being found in New York, New Jersey, Siberia, and Sweden, and is generally termed *magnetite*. It has the peculiar property of not remaining at rest when suspended, except when certain points are directed north and south. This quality caused the ancients to use it to direct ships at sea, for which purpose the mariner's compass displaced

KING JOHN SIGNING MAGNA CHARTA

(Opp. 1674)

it. A piece of loadstone is called a *natural magnet* and differs from an *artificial magnet,* which may be made of a bar of soft iron or steel by imparting to it the peculiar magnetic property by friction from other magnets, or by the action of an electric spark. Artificial magnets retain their magnetic properties for a short or long time, depending on the quality of the iron of which they are made. Pure soft iron remains a magnet only while the magnetizing action lasts, and one so made is called a *temporary magnet,* while hardened iron and steel retain their magnetic properties a long time, these metals being used to make *permanent magnets.* The best permanent magnets are made of hardened steel. They are called *bar magnets,* if straight, and *horseshoe magnets,* if they are U-shaped. The two ends of a horseshoe magnet are connected by a soft iron called the *armature.*

The cause of magnetic force is unknown, but is generally believed to be due to molecular action. It is thought that every magnetizable body, whether the body is magnetized or not, constitutes a permanent magnet, but before it is magnetized the poles of the molecules point in every direction, thus neutralizing one another. When increasing magnetization is produced by friction or electric induction, the action of the molecules becomes more and more nearly parallel, and a closed electric current flowing around each molecule results. Since both natural and artificial magnets, when freely suspended on a pivot, rest with their length in a direction north and south, they are used in constructing the compass. The attraction is greatest at the extremities, which are designated respectively the *north* and *south poles,* or simply the *poles,* and decreases toward the middle. The north-seeking pole is distinguished as the positive and the south-seeking as the negative, marked + and — respectively. The similar poles of magnets repel and the dissimilar attract each other, the intensity of repulsion and attraction varying inversely as the square of the distance. All substances are attracted or repelled, though in most cases the action is very feeble. Those attracted are called *paramagnetic* and those repelled are termed *diamagnetic* substances, though the latter class is most numerous. To illustrate, iron is attracted by both poles of a magnet, while bismuth is repelled by both. The *magnetic field* is the space surrounding a magnet in which attraction or repulsion takes place, and corresponds to the electric field surrounding an electrified body. Magnets depend for their strength upon size, material, and construction, varying greatly with the modification of each. One of the largest magnets in the world is at the Stevens Institute of Technology, in New York, which weighs 1,600 pounds, and has a lifting capacity of about forty tons, exceeding its own weight about fifty times.



MAGNETIC NEEDLE.
N N, **North Poles.** *S S,* **South Poles.**

The circumstance that the poles of a magnet point to the north and south is accounted for by the fact that the earth is a great magnet. Its magnetic poles do not correspond with its geographical poles, but they are known to attract the poles of a magnet. The *magnetic needle* of a compass, therefore, does not point to the true geographical north in all parts of the earth, but slightly east or west of it. This deviation from the true north is called *declination,* or *variation,* and differs in different parts of the earth. Sir J. C. Ross, in 1831, discovered the magnetic north pole in latitude 70° 5′ north and longitude 90° 46′ west, which is about 1,000 miles from the geographical north pole. The magnetic south pole has not yet been discovered, but the magnetic equator has been partially traced, and is known to cross the terrestrial equator at several places, though never deviating more than 12° from it. The earth appears to owe its magnetism to the electricity circulating in the atmosphere. This atmospheric electricity is probably produced by the sun's rays heating unequally different portions of the earth's surface. In many places the lines of force of the earth's magnetic field are inclined to the earth's surface. Where this is the case one of the poles of a magnetic needle is inclined to the earth, which is called the *inclination,* or *dipping,* of the needle. The north pole is inclined in the Northern Hemisphere and the south pole in the Southern. At the magnetic poles the needle dips vertically downward, and at the magnetic equator it assumes a horizontal position.

MAGNETITE (măg′nĕt-īt), an ore of iron, so called from its magnetic properties. In some cases it exhibits polarity, when it is known as *loadstone,* or *lodestone.* It has a semimetallic lustre, is iron-black in color, and occurs both massive and crystalline. This product is mined in many parts of the world and is important as a commercial source of iron. Large deposits of it are found in Sweden, Siberia, Canada, and many parts of the United States, especially in the Adirondacks, in the iron range of Minnesota, and in various parts of Colorado, California, and Missouri.

MAGNETO-ELECTRIC MACHINE. See **Electric Machine; Dynamo; Electricity,** etc.

MAGNIFICAT (măg-nĭf′ĭ-kăt), the song of thanksgiving uttered by the Virgin Mary, as recorded in Luke i, 46-55. It is named from the first word in the Latin version *Magnificat anima mea, Dominum,* meaning "My soul magnifies the Lord." It was incorporated into the service of vespers, and is usually sung or said after the first lesson at evening prayer.

MAGNOLIA (măg-nō′lĭ-á), a genus of ornamental shrubs and trees, native to North America, China, India, Japan, and other portions of Europe and Asia. Many of the species are noted for their great beauty, handsome flowers, and evergreen or deciduous leaves. The flowers of some are ten inches in diameter, but most bear smaller flowers. They are white or purple-white in color and are noted for their fragrance. The wood is of little value on account of its being soft and spongy, but some of the trees attain a large size and yield woods utilized in manufacturing ornamental products and baskets. Some species have roots of which the bark is serviceable in preparing a useful tonic. The *Virginian magnolia,* or *Magnolia Grandiflora,* has properties that are utilized in making medicine for treating rheumatic complaints, while the *Magnolia Umbrella* yields a tonic. The largest American species is common to the region from North Carolina to the Gulf. It attains to the height of seventy feet, has evergreen laurellike leaves, and bears a whitish flower. The *Magnolia Yulan* has been cultivated nearly 2,000 years in China, where it thrives at high elevations and serves as a favorite ornamental tree.

MAGNOLIA.

MAGPIE (măg′pī), the name of a beautiful bird classed with the crow family, but differing from the common crow in having a smaller body, short wings, a long tail, and various colors. Several species of magpies have been described, two of which are native to America, and abound from the northern portion of the continent to the Gulf of California. The common magpie is from fourteen to eighteen inches in length, has black and white plumage with markings of purple and green, and is shy, but cunning in obtaining food and avoiding enemies. It subsists principally on animal food and preys upon the eggs and young of other birds, for which purpose it robs their nests promiscuously. The nests are built substantially, some species constructing a dome of interwoven sticks for protection, and the eggs are usually from six to nine in number, bluish-green in color, and blotched with ashen hues. The magpie is generally met with in pairs, issues a chattering note, and may be domesticated, even showing capability of learning to articulate some words by imitation, and is inclined to hide articles of bright color. Most species are shy in a native state, but in populated districts they become familiar and build their nests under the eaves of habitations and churches.

MAGRUDER (má-grōō′dẽr), **John Bankhead,** general, born in Winchester, Va., Aug. 15, 1810; died in Houston, Tex., Feb. 19, 1871. In 1830 he graduated at the West Point Military Academy, served as captain in the Mexican War, and was promoted to the rank of lieutenant colonel. He resigned his commission at the beginning of the Civil War and joined the Confederate army as a brigadier general. His services were distinguished particularly at Yorktown, in the Peninsular Campaign, and in commanding the department of Texas, where, in 1863, he recaptured Galveston. After the Civil War he joined the imperial forces of Mexico under Maximilian, but when the republic was reëtablished he returned to the United States and attracted large audiences by his lectures on Mexico.

MAHABARATA (má-hä-bä′rá-tá), a celebrated epic in the literature of India, comprising a history of the war waged in the ancient kingdom of Bharata. It is sixteen times as long as the Iliad of Homer, and is usually divided into eighteen books. The principal part of the work treats of the contest between the Kauravas and the Pandavas. It recites in an interesting manner how the ancient families of the Kauravas, owing to their conceit and wickedness, were overthrown by the Pandavas, who are treated as the heroes of the epic. The latter are lauded as faithful in their worship of the true god Krishna, the human incarnation of Vishnu. It is the opinion of most writers that the poem originated through a collection of materials produced in different periods, and the Hindus attribute it to Vyâsa, who is spoken of as the *arranger.*

MAHAFFY (má-hăf′fĭ), **John Pentland,** Irish teacher, born near Vevay, Switzerland, Feb. 26, 1839. He secured the principal part of his education in Germany, but later studied at the University of Dublin, and in 1867 became a teacher in that institution. His writings and lectures show a prolific fund of intellectual vigor, and occasioned the King of Greece to decorate him with the gold cross of the Order of the Savior, in 1877. His writings embrace

"Social Life in Greece," "Kant's Critical Philosophy for English Readers," "Alexander's Empire," "History of Classical Greek Literature," and a translation of Fischer's "Commentary on Kant." He died at Dublin, Ireland, May 1, 1919.

MAHAN (må-hăn'), **Alfred Thayer,** naval officer and author, son of Dennis Hart Mahan, born in West Point, N. Y., Sept. 27, 1840; died Dec. 1, 1914. In 1859 he graduated at Annapolis, was assigned to duty in Brazilian waters, and returned to the United States at the beginning of the Civil War. He was promoted to a lieutenantcy in 1861 and served efficiently on various battleships. In 1865 he was made lieutenant commander, became captain in 1885, and in 1896 retired from the service at his own request. President McKinley appointed him to be an American delegate to the peace conference at The Hague in 1899. Degrees were granted to him by Yale, Harvard, Cambridge, and Oxford. Many of his writings have been translated into German, French, Japanese, and other languages. They include "Influence of Sea Power upon History," "Interest of America in Sea Power," "Life of Admiral Farragut," "Life of Nelson," "Influence of Sea Power upon the French Revolution," and "Lessons of the Spanish-American War."

MAHAN, Dennis Hart, soldier and teacher, born in New York City, April 2, 1802; died Sept. 16, 1871. In 1824 he graduated at the West Point Military Academy, became an assistant professor of mathematics and engineering, and in 1826 went abroad to study military science for four years. He became professor of civil and military engineering at West Point in 1832, a position he held until his death, which resulted from drowning in the Hudson while suffering under temporary insanity. Among his books are "Industrial Drawing," "Elementary Course of Military Engineering," "Fortification Drawing," and "Stereotomy."

MAHANADI (må-hä-nŭd'ē), or **Mahanuddy,** a river in the southern part of India, rises in the Central Provinces, and flows into the Bay of Bengal by a large delta. It receives the inflow from several tributaries and has a total length of 520 miles. During the rainy seasons it carries a large volume of water, the surplus being utilized to irrigate a large scope of country. In the dry season it becomes very low.

MAHANOY CITY (mä-hå-noi'), a borough of Schuylkill County, Pennsylvania, in the anthracite coal region, ten miles north of Pottsville. It is on the Lehigh Valley and the Philadelphia and Reading railroads. Among the chief buildings are the public library, the high school, and several fine churches. It has extensive iron works and is important as a mining and shipping center for anthracite coal. The vicinity was first settled in 1859 and the place was chartered as a borough in 1863. Population, 1900, 13,504; in 1920, 15,590.

MAHDI (mä'dē), the name given by the Mohammedans to the messiah that was promised by Mohammed, who is expected to appear and fill the world with righteousness by effecting the universal adoption of Mohammedanism. The appellation was applied particularly to a successor of Mohammed named Abu'l-Kasim, the twelfth Imam, who disappeared mysteriously in 879 A. D. It was generally believed that he had gone to an unknown abode for the purpose of preparing a place for the righteous, and that he would reappear on the last day. Since then there have been many mahdis who claimed power and authority, the most prominent of recent times being Mohammed Ahmed. He was born in Dongola, Nubia, in 1842, and died of smallpox June 25, 1885. This mahdi took a course in Mohammedan theology at Khartoum and Berber, and retired to the island of Aba in the White Nile at the age of 25 years, where he lived in studious solitude until 1882, when he proclaimed himself the messiah. The loose government of Egypt made it possible for him to raise a considerable army. He declared a Holy War (*jihad*) and seized Kordofan in 1883, which he made his capital. In November of the same year he defeated an Egyptian army of 10,000 under Hicks Pasha, and in 1885 conquered Khartum, where General Gordon was killed.

MAHMUD II. (mä-mōōd'), Sultan of Turkey, son of Sultan Abdul-Hamid I., born July 20, 1785; died July 1, 1839. He ascended the throne on July 28, 1808, under the influence and with the support of the Janizaries. Shortly after he became involved in a war with Russia, which lasted until 1812, and by the Treaty of Bucharest he lost Bessarabia and the provinces of Moldavia, Servia, and Wallachia. In 1821 Greece revolted. By the success in the Battle of Nazarino, in 1827, that country became independent, but was not so recognized until three years later. While the Grecian war of independence was progressing, Mahmud made military reforms, and in 1826 was able to effect the destruction of the Janizaries. In 1829 a war with Russia terminated in the Treaty of Adrianople, by which the Ottoman power was further curtailed in Europe. Shortly after Mehemet Ali, Pasha of Egypt, began a war for independence, which was settled by a treaty in 1833 through the intervention of Russia, but neither of the contending parties was satisfied. In the same year Russia forced him to make the Treaty of Unkiar Skelessi. Subsequently he effected many civil reforms and concluded a number of commercial treaties by which the foreign relations were greatly strengthened and commerce was extended. In 1839 he sent an expedition against Mehemet Ali to restore lost power, but died before results were obtained.

MAHOGANY (må-hŏg'å-nў), a large tree of the order Meliaceae, common to tropical America, noted for its close-grained and hard wood. The tree reaches maturity in a period of 200 years. It attains a height of fifty to ninety feet, with a diameter of from five to twelve feet, and has lofty and spreading branches. Its flowers are fragrant and the fruit is the size of a turkey's egg. The wood is one of the most valuable, being hard, reddish-brown, compact, and capable of taking a fine polish. It is useful in the manufacture of furniture, musical instruments, and for veneering. Sir Walter Raleigh brought the first specimens of mahogany wood to Europe, but it was not used extensively in the industries until about 1725. Mexico, Honduras, and the West Indies are the countries where mahogany is produced most extensively. The term mahogany is often applied to any one of various trees yielding wood which resembles the true mahogany, such as the *rohuna* tree of India and the *mountain mahogany* of the western part of the United States.

MAHOGANY.
a, flower; *b*, partly opened fruit.

MAHRATTAS (mȧ-răt'tȧz), a people of British India, who are supporters of the Hindu caste and religious systems, but are thought to be of Persian descent. The first mention of them in history occurred in the 17th century, when they came in contact with the Mongols, and in 1761 fought a series of battles against incursions of the Afghans. Their possessions extended along the western side of the peninsula. They were reduced to dependence by the British in the early part of the 19th century. The last Mahratta ruler held out against the Europeans by employing French troops and discipline, but he was defeated in 1843 by the British. The three Mahratta states of Indore, Gwalior, and Baroda did not participate in the Sepoy Mutiny of 1857 and are now governed respectively by officials who bear the titles of Holkar, Sindia, and Gaekwar. These people at present do not support caste laws with much strenuosity, but are noted as Brahma worshipers of considerable earnestness.

MAIDEN, Joseph Henry, botanist, born in London, England, April 25, 1859. He studied in his native city and became assistant botanist in the Technological Museum at Sydney, Australia. Later he was made superintendent of that institution, and in 1893 was chosen secretary of the Royal Society of New South Wales. His books include "Useful Native Plants of Australia," "Forest Flora of New South Wales," and "Manual of the Grasses of New South Wales."

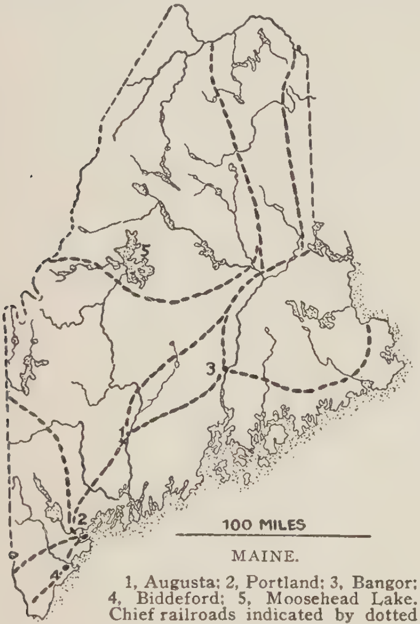
MAIDENHAIR, the name of a class of small ferns, including several species that are distributed in both hemispheres. They are delicate and graceful plants and thrive best on moist rocks and in shady places. Some of the species are cultivated as house ferns. The common maidenhair has pedate leaves and sweet rootstocks.

MAIMONIDES (mī-mŏn'ĭ-dēz), Jewish scholar and theologian, born in Cordova, Spain, March 30, 1135; died at Cairo, Egypt, Dec. 13, 1204. His father was a man of profound learning. He exercised much care in the elementary instruction of the son, who later was given a complete course under Arabic scholars in philosophy, theology, and the science of medicine. In 1148 the Mohammedan invaders of Spain required both Jews and Christians to confess Islam or emigrate. Accordingly, the Maimonides family removed to Egypt by way of Jerusalem. At Cairo the younger Maimonides became influential among the Jewish people and with the high officials, attaining to the highest position in Jewish worship and becoming physician to the Sultan of Egypt. His writings are voluminous, embracing a systematic treatise of Jewish traditions and demonstrations of basic principles upon which Judaism rests. He was able to write in both Hebrew and Arabic. Many of his books have been translated into Latin and other languages. Among the principal works are "Complete System of the Talmudic Judaism" (in Hebrew) and the works in Arabic entitled "Compendium of Logic," "Guide of the Erring," "Exposition of the 613 Laws of Moses," and "Commentary on the Mishna."

MAIN, a river of south central Germany, rises in the Fichtelgebirge. It has a general course toward the west, and joins the Rhine near Mentz. The Main is 306 miles long, is navigable about 200 miles, and affords connections with the Danube by Ludwig's Canal. Its valley is highly fertile, contains several prosperous cities, and is noted for the culture of cereals and the vine. Among the chief cities on its banks are Frankfort, Würzburg, Schweinfurt, and Offenbach.

MAINE, the most northeasterly state of the United States, one of the New England group, popularly called the *Pine Tree State.* It is bounded on the north by Quebec, east by New Brunswick, south by the Atlantic, and west by New Hampshire and Quebec. The length from north to south is 302 miles; breadth, 185 miles; and area, 33,040 square miles. The Atlantic coast has a length of 245 miles and is indented by numerous inlets, including Casco, Penobscot, Bluehill, Frenchman, Machias, and Passamaquoddy Bays. A large number of small islands lie off the coast.

Description. Much of the surface is moderately hilly, the general slope being toward the south. Through the center and along the western boundary are groups of mountains, including chiefly ranges of the White Mountains, which extend into the State from New Hampshire. The highest elevation is Mount Katahdin, located in the north central part, and has an elevation of 5,283 feet. Other elevations of prominence are Saddleback Mountain, 4,000 feet, and Mount Baker, 3,390 feet. The coast is fringelike and has many natural harbors, but these have the disadvantage of exceedingly high tides, which range from eight to fourteen feet. The islands and headlands of the coast are rocky.



MAINE.

1, Augusta; 2, Portland; 3, Bangor; 4, Biddeford; 5, Moosehead Lake. Chief railroads indicated by dotted lines.

Maine has many inland lakes. Fully 600 are of considerable size and the total lake surface is about 2,350 square miles. Moosehead Lake, the largest inland body of water, has a surface of 120 square miles and is the source of the Kennebec River. Rangeley Lake, the source of the Androscoggin River, covers 90 square miles. Other lakes of large size include Chamberlin, Eagle, Milinokett, Grand, Sebec, Richardson, and Sebago lakes. Many of the streams afford excellent water power. All of the larger rivers flow southward into the Atlantic. A part of the northern boundary is formed by the Saint John and on the eastern border flows the Saint Croix, which separates the lower part of Maine from New Brunswick. The Penobscot River, which rises near the western border, drains the central part of the State and flows into Penobscot Bay. The Allegash and the Aroostook are tributaries of the Saint John. Other rivers include the Kennebec, Androscoggin, Saco, Salmon Falls, Union, and Machias. Nearly all of the rivers are rapid and have many cataracts, hence are not valuable for commerce. However, the Kennebec is navigable to Augusta, 26 miles, and the Penobscot to Bangor, 25 miles.

The climate is temperate and characterized in winter by low temperatures and in summer by extremely pleasant weather. In January the mean temperature is 20° and in July it is 68°. The extremes of summer are from 90° to 98° and in winter from 20° to 30° below zero. Sudden and violent changes in the weather are quite frequent, owing to the winds blowing alternately from the north and south. Snow falls to considerable depths in the winter. The excellent drainage renders the State one of the most healthful, malaria being of very rare occurrence. The rainfall for the whole State is forty inches and it is quite evenly distributed throughout the year.

Mining. The State is rich in fine building and monument stone. The coast and the region extending many miles inland are noted for the vast deposits of granite, which occur in great veins or in eruptive masses. Limestone is quarried extensively and much of the product is utilized in the manufacture of lime. Considerable profit is obtained from the output of slate, and many localities have sand well fitted for the manufacture of a superior quality of glass. Small quantities of iron, gold, silver, tin, copper, and manganese are obtained. Large and beautiful crystals of tourmalin are found in Oxford County, and mineral springs yield waters that are of high commercial importance.

Fisheries and Forests. The fisheries take high rank among those of New England and a large number of people are engaged in the fishing industry. Lobster fishing has a high place, being more important in the State than in all the remainder of New England, and clam fishing is next in importance. The salmon fisheries are the largest on the Atlantic coast. Other catches include the herring, cod, halibut, and menhaden. Much of the product is cured and canned.

The State has forests estimated at 23,700 square miles, about 78 per cent. of the total land area, and the value of its timber products is $15,000,000 annually. Although the primeval forests have been cut over, a large output of lumber is obtained from the second growth. The most valuable timber lands are in the basin of the Saint John River, but fine forests are available in the region drained by the Penobscot and the Androscoggin. Among the chief varieties are spruce, birch, poplar, fur, hemlock, and cedar.

Agriculture. The rugged and broken surface renders much of the State unfit for cultivation, but many of the river valleys are very fertile. In the Aroostook valley, in the northeastern part of the State, is a large region of fertile farming land. Hay is the chief crop and is grown on a larger acreage than the aggregate of all the land devoted to the cultivation of cereals and vegetables. Among the products are oats, potatoes, buckwheat, corn and barley, but the acreage devoted to each of these is not considerable. The raising of apples is an important and growing enterprise and the quality produced is of a high class. Sheep are represented by larger numbers than any other domestic animals, being due to the fact that much of the cut-over timber land yields suitable pasturage. Cattle are grown to some extent for the market, but principally for the dairy products, in which the State ranks next to Vermont in the New England group. Other domestic animals include horses, swine, mules, and poultry.

MANUFACTURING. Maine is particularly favored by having an abundance of water power. This factor, combined with its timber resources and large deposits of commercial stone, gives it considerable importance as a manufacturing State. Nearly thirty per cent. of the inhabitants engage in the enterprise. Shipbuilding has long been an important industry, but it has declined somewhat with the increased use of steel for the construction of vessels. Bath has extensive shipyards and has produced many of the seagoing vessels made in the United States. The manufacture of cotton goods takes high rank and may be classed in importance with the industries of lumbering and paper making. Large returns are obtained from the canning and preserving of fish, from the manufacture of woolen goods, and from the products of foundries and machine shops. Other manufactures include flour, leather, furniture, clothing, slate shingles, monuments, lime, and earthenware.

TRANSPORTATION AND COMMERCE. The Atlantic coast, including the indentations, has a length of nearly 2,500 miles. At present there are in operation 2,350 miles of railways and 3,500 miles of electric lines. Though railroad transportation is extensive, the lines are confined chiefly to the southern and eastern parts of the State. They include the Maine Central, the Boston and Maine, the Canadian Pacific, the Grand Trunk, and the Bangor and Aroostook railroads; a number of the lines have double tracks. Portland on Casco Bay, is the principal railway center. Steamers ply regularly between the largest cities of Maine and the commercial centers of the United States and Canada. The exports greatly exceed the imports. The former consists largely of lumber, cotton goods, granite, and boots and shoes, while the imports embrace principally sugar, wool, coal, and food stuffs..

EDUCATION. The illiteracy is 3.3 per cent. of the population ten years of age or over, but among the native white inhabitants it is only 1.09 per cent. Much attention has been given to develop the educational interests from an early period.. The town is the smallest unit for the management of the schools and the compulsory attendance period is from seven to fifteen years inclusive. High schools are maintained in all the towns and cities, all of which have well-articulated courses of study and prepare the students for higher work in the institutions of higher learning. Formerly much of the secondary instruction was given in private academies, but free academic instruction has been maintained in the towns since 1873. Towns have been permitted, since 1889, to contract with any academy or high school for the tuition of their students, hence such schools receive the same aid as those regularly maintained by public taxation. About 25,000 students attend the high schools and 6,000 attend the academies of the State.

State normal schools are maintained at Castine, Farmington, and Gorham. Supplementary instruction is given to teachers under the State commissioner of education, who is authorized to provide a number of summer schools. The University of Maine is at Orono, in which the educational system terminates. Among the private and denominational institutions are Colby College at Waterville, Bowdoin College at Brunswick, and Bates College at Lewiston. Many institutions are maintained to teach commerce, music, and the arts. Portland has the school for the deaf and the Maine General Hospital, Bangor has an orphan asylum, and Bath has a military and naval orphans' asylum. The penitentiary is at Thomaston, the industrial school for girls is at Hallowell, and the industrial school for boys is near Portland. Augusta and Bangor have hospitals for the insane. A large number of the convicts are employed in industrial work, such as making furniture, harness, and brooms.

GOVERNMENT. The present constitution was adopted in 1819 and the State was admitted the next year. It vests the executive authority in a Governor, who is elected for a term of two years, a plurality vote being necessary to election. Other State officers include the auditor, treasurer, and secretary of State, elected by the people, and an adjutant general and a commissioner of education, who are appointed by the Governor and council. The Legislature is composed of a senate and house of representatives, the former having 31 and the latter 151 members. Meetings of the Legislature convene biennially on the first Wednesday in January. Eight judges compose the supreme court, and they serve under appointment by the Governor and council for a term of seven years. A superior court is maintained in Portland. Each county has a probate judge. The officials of towns have larger powers in local government in Maine than in most of the states, and in this respect it resembles the other states of the New England group.

INHABITANTS. The increase in population has not kept pace with the states of the northwest. At present the average is 42 persons to the square mile. Comparatively few of the people are of foreign birth and the foreign element is made up largely of Canadians and French. Augusta, on the Kennebec River, is the capital, and Portland is the largest city. Other cities include Lewiston, Bangor, Biddeford, Auburn, Bath, Rockland, Belfast, Westbrook, Calais, Gardiner, and Waterville. In 1900 the State had a population of 694,466. This included a colored population of 2,240, of which four were Japanese, 112 Chinese, 798 Indians, and 1,319 Negroes. Population, 1920, 768,014.

HISTORY. The Cabots visited the coast of Maine in 1497, being the first white men to explore that region after the discovery of America by Columbus. In 1524 Verrazano cruised along the coast and landed at several places, but the early attempts made by French, English, and Dutch to found settlements were unsuccessful. The first notable English colony was established in 1607 by George Popham near the mouth of the Kennebec River, where Capt. John Smith was located for a time, but it was abandoned the next year. Sir Ferdinando Gorges obtained grants to territory between the Piscataqua and Kennebec rivers, and that part of Maine passed to Massachusetts in 1652. The Duke of York came into possession of eastern Maine in 1664, which portion likewise was annexed to Massachusetts in 1691, while the whole of Maine remained a part of Massachusetts until 1820. On April 15, 1820. Maine was admitted into the Union as the twenty-third State, and the first constitution is still in operation. A dispute regarding the northeastern boundary was settled by the Ashburton Treaty in 1842, though its boundary with Massachusetts had already been settled in 1737. The Maine law prohibiting the manufacture and sale of spirituous liquors was passed in 1851, but was further strengthened in 1858. In the Civil, Spanish-American, and World wars Maine furnished its proportionate share of men to support the government. It has considerable natural resources yet undeveloped, which are attracting the attention of both capitalists and laborers.

MAINE, Sir Henry James Sumner, jurist, born in England, Aug. 15, 1822; died in Cannes, France, Feb. 3, 1888. He studied at Cambridge, was called to the bar, and became a professor of civil law at the Middle Temple, London, where he remained until 1862. From that year until 1869 he was attorney of the council for India, and in 1870 became professor of comparative jurisprudence at Oxford University, but in 1877 engaged at Cambridge as law professor. He became distinguished in making various reforms in the laws of India and because of his writings on institutional law. His most important works include "Village Communities in the East and West," "Ancient Law," "Early History of Institutions," "Popular Government," and "Dissertations on Early Law and Customs."

MAINE, University of, a coeducational institution of higher learning at Orono, Me. It was established in 1865 as the State College of Agriculture and Mechanic Arts, but was reorganized under its present name in 1897. The departments include those of agriculture, engineering, technology, and arts and sciences. With it is affiliated the Maine Agricultural Experiment Station. It has a library of 85,000 volumes. The value of the college property is $1,500,000. The faculty consists of 145 teachers and professors and the attendance is 1,503 students, exclusive of summer sessions.

MAINTENON (măn-t'-nôn'), **Françoise D'Aubigné, Marquise of,** second wife of Louis XIV., born in Niort, France, Nov. 27, 1635; died at the School of Saint Cyr, April 15, 1719. She was born while her parents were in prison, but after their release accompanied them to Martinique in the West Indies, where her father died in 1645, and shortly after she returned with her mother to France. Her friends provided for her education in a convent, where she was converted to the Roman Catholic faith at the age of fourteen, and soon after married the poet, Paul Scarron (1610-1660), who was then quite aged and deformed. At the death of her husband, in 1660, she was reduced to poverty, but was granted a pension and was given charge of the two sons of Louis XIV., training them with much patience and tenderness. About that time she formed the acquaintance of Louis XIV., who became infatuated with her, and in 1685 contracted a private marriage with her, though he was only 47 while she was fifty years of age. Ever after she remained his faithful assistant, but she was charged with taking an important step in securing the revocation of the Edict of Nantes, after which persecutions were directed against the Protestants. At the death of the king, in 1715, she founded a home for poor girls at Saint Cyr, where she patronized art and literature, remaining there until her death.

MAINZ. See **Mentz.**

MAIR, Charles, writer, born at Lanark, Ontario, Sept 21, 1840; died in 1906. He studied at Queen's University, Kingston, and in 1868 entered the government service. The following year he was taken prisoner by the insurrectionists and sentenced to death, but soon escaped to Fort Garry, now Winnipeg. For some time he was immigration agent of Alberta and corresponded with the Montreal *Gazette.* His books include "Dreamland and Other Poems" and "Tecumseh, a Drama."

MAITLAND (măt'lạnd), **William,** statesman, born at Lethington, Scotland, about 1528; died June 9, 1573. He studied at Saint Andrews and in Germany, and was converted to the doctrines of the reformation. In 1554 he entered the service of the queen regent, Mary Stewart, and five years later became a speaker in the Parliament that abolished papal authority in Scotland. He appears to have disagreed with the reformers in 1563, as he opposed the ratification of Knox's "Book of Discipline," and was retained to prosecute its author for treason.

In 1566 he was implicated in the plot against Rizzio, gave at least tacit consent to the scheme of Bothwell for the murder of Darnley, and remained in correspondence with Mary while she was a prisoner at Loch Leven. Though he aided the queen to escape, he fought against her at Langside in 1568. In the same year he attended the conferences at York, where he was arrested as a traitor, but was subsequently liberated. In 1572 he aided in the defense of Edinburgh castle, but surrendered the next year and was imprisoned at Leith, where he died.

MAIZE. See **Corn, Indian.**

MAJESTY (măj'ĕs-tȳ), a title of kings, queens and emperors. It is generally used with the possessive pronoun, as, his majesty, your majesty, or, in the plural, their majesties. The King of England is spoken to directly as your majesty, and letters are addressed "To the King's Most Excellent Majesty." Various appellations were made to divers sovereigns at different times. "Most Catholic Majesty" was the former address applied to the King of Spain; "Apostolic Majesty," to the kings of Hungary; and "Most Christian Majesty," to the kings of France. "Imperial Royal Majesty" is a title now used in addressing the emperors of Germany and Austro-Hungary.

MAJOLICA (mȧ-jŏl'ĭ-kȧ), a species of fine pottery manufactured extensively in Italy from the early part of the 15th century. It is thought to have been produced first on Majorca, an island called Majolica in the Italian. At first it was made of coarse material and was ornamented with a plumbiferous glaze, but later a more beautiful stanniferous glazing was invented, by which the pottery was rendered more durable and of a more enameledlike appearance. Later fine paintings of ruby and golden tints were applied, which have been remarkable in preserving their appearance and mold. Within recent years it has become possible to reproduce this ware with much success, and vases, tablets, friezes, and flower pots are now made of it.

MAJOR (mā'jẽr), in military, the lowest in rank of the field officers, being classed below a lieutenant colonel and next above a captain. In the absence of the lieutenant colonel he discharges that officer's duty, his usual duties being to attend orders of superior officers and to have charge of exercises of the battalion or regiment.

MAJORCA (mȧ-jôr'kȧ), the largest island of the Balearic group, in the Mediterranean Sea, forming a part of the Spanish dominion. It has a length of 57 miles; breadth, 45 miles; area, 1,332 square miles. The soil is generally fertile and the coast line is irregular. At many places the shores are precipitous and lofty. Several railway lines are operated and others have been projected. The principal products include fish, fruits, cereals, silk, hemp, cattle, and a number of minerals. Palma is the chief railroad and commercial town. Population, 1922, 251,968.

MAJORITY (mȧ-jŏr'ĭ-tȳ), the term applied to more than half of a given number or group, and used to designate the excess by which one group of things exceeds another group. In elections it is employed to qualify the amount more than one-half of the votes cast for all the candidates who stand for the same office, and differs from a *plurality* in that the latter designates the number by which the votes cast for one candidate exceed those cast for another, but not constituting a majority. Thus, 75 is a majority of 21 over 54. On the other hand, no one of three candidates having respectively 25, 50 and 68 votes has a majority of all the votes cast, but the one who received 68 votes has a plurality over each of the other two. The term majority is used to designate full age; the age at which, by the laws of any country, persons of sound mind are considered legally competent to manage their own affairs. In most countries the period of minority ceases and the age of majority begins at 21 years.

MAKAW, the name of a small tribe of Indians in the United States, who live upon a small reservation in the vicinity of Puget Sound. They appear to have crossed over from Vancouver Island. The women do fancy basket and bead work and the men are skilled as fishers and boatmen. The men are peculiar in that many of them wear beards, although this may be due to the fact that they are an admixture with the Russians.

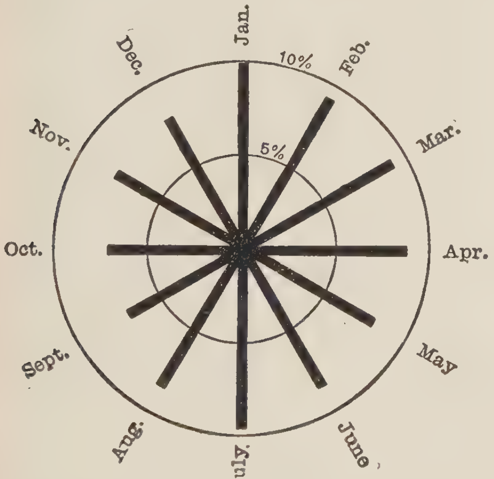
MALACCA (mȧ-lăk'kȧ), or **Malakka,** a British possession on the southwestern coast of the Malay Peninsula, constituting a part of the Straits Settlement. The area is 650 square miles. Much of the surface is low and swampy. Sago, rice, and pepper are the chief products. Malacca, the capital, has a population of 20,500. The territory has been a British possession since 1874. Population, 1922, 93,274.

MALACCA, Strait of, an important channel between Sumatra and the Malay Peninsula, which connects the China Sea with the Indian Ocean. It is from 32 to 140 miles wide and about 475 miles long. A number of islands are located in the narrower part of the channel, including the British settlement of Singapore.

MALAGA (măl'ȧ-gȧ), a seaport of southern Spain, capital of the Málaga province, on the Mediterranean Sea, seventy miles northeast of Gibraltar. It dates from the times of the Romans, when it developed a large commerce, and during Moorish occupation its dockyard and quay were improved materially, much of the works still existing. The manufactures include cotton and woolen goods, leather, clothing, cordage, ironware, soap, and machinery. The export and import trade is large, consisting principally in cereals, wines, salt, iron manufactures, and fruits. Sugar is one of the leading products and exports. The construction of railroads to interior points has given the trade of the city a vast impetus. Among the improvements are several public schools, the government buildings, and modern municipal facilities. The climate is remarkable for its uniformity, healthfulness, and many days of sunshine. Ferdinand and Isabella expelled the Moors from Málaga in 1487, since which time it has been a Spanish city. Population, 1920, 133,045.

MALAR. See **Lake Malar.**

MALARIA (mȧ-lă'rĭ-ȧ), a morbid poison originated in swamps, or the effluvia from the decomposition of vegetable or animal matter. When a large quantity of such a poison is inhaled, it affects the system through the blood often as long as twelve months after one has been exposed to it, and in many cases exerts its depressive influence through life. It emanates most readily from marshy land under the influence of heat at 60° Fahr., but is not generated under thorough drainage, or when the land is flooded with much water or is frozen. An elevation of more than 1,000 feet above sea level is proof against malaria. The diseases arising from it include intermittent and congestive fevers, ague, and a class of yellow fever. Rice fields and marshy regions of tropical and semitropical countries are most commonly affected. The west coast of Africa and the Roman Campagna of Europe are noted malarial districts.



Malarial fever in the Philippines, showing proportion of deaths for each month before persistent work was begun to exterminate the *Anopheles,* a species of mosquito.

Charles Laveran, a French physician, in 1880, discovered that the disease known as *malaria* is due, not to poisonous emanations from certain soils, but to an animal parasite found in the blood of man and many animals. These parasites belong to a class of protozoa. Additional information on this subject was furnished in 1899 by Major Ross, who was stationed at Calcutta with the British army. With the aid of several physicians he found that mosquitoes fill themselves with the infected blood of birds and other animals, and then deposit their eggs and die near them. In this way the water becomes contaminated with the germs of the disease, is fed upon by the larvae, or is drunk by man. The young mosquitoes, being infected with the parasites, carry them to human beings, as well as to the water and to other animals taken as food by man. As a means of protection against malaria, plans have been devised to destroy the mosquito, which is done by fumes of tobacco, gases, odors of turpentine, garlic, and by pouring petroleum upon the surface of ponds and marshes where the insects breed and propagate their species.

MALAY ARCHIPELAGO (mȧ-lā'), the most important group of islands in the world, situated southeast of Asia. This group is frequently called the Asiatic, Indian, or Eastern Archipelago. It is surrounded by the China Sea, Pacific Ocean, Indian Ocean, Australia, and Malaya; the last named region does not belong to the group. Within the confines of the archipelago are thousands of islands, many of which are small, but all are more or less fertile and produce luxuriant vegetation. The principal islands include Java, Borneo, Sumatra, Celebes, the Philippines, the Moluccas, Bali, Madura, Banca, Timor, Flores, Billiton, Sumbawa, Lombok, and Ceram. This group includes many active volcanoes in different parts of the archipelago. Malays constitute the principal race, but there are various other races and a small per cent. of Europeans. The productions are largely tropical, embracing minerals, fish, tobacco, fine fruits, gum elastic, coffee, tea, sugar, rice, timber, and various domestic animals. Holland has the principal possessions, to which the name Dutch East Indies is applied.

MALAY PENINSULA, Malaya, or **Malacca,** a long, narrow stretch of land extending from Burmah and Siam, in Asia, in a general southeasterly direction, separated from Sumatra by the Strait of Malacca. The eastern boundary is formed by the China Sea and the Gulf of Siam, and the Isthmus of Kra forms a connection with Lower Siam. The width is from 25 to 215 miles, and the area is about 91,500 square miles. It has extensive ranges of mountains, some of which are from 5,000 to 8,500 feet above the sea. Dense forests cover the mountain districts and many of the lowlands. The drainage is by numerous rivers, but they are generally small. A large part of the surface is very productive. Tin and other minerals abound, especially iron, coal, silver, and gold. The agricultural products include sugar, cotton, rice, yams, tobacco, pepper, and many varieties of fruit. Malays, Siamese, and Negritos constitute the principal native population, and a large per cent. of Chinese have settled in the region. The southwestern portion of the peninsula consists of British territory, to which the name Malacca is applied, and of which Malacca is the capital city. Independent chiefs still control large tracts under treaties with Siam and Great Britain. The total population is estimated at 1,750,000.

MALAYS (mȧ-lāz′), one of the principal secondary races, closely allied to the Polynesian. This race of man is found largely in the Malay Peninsula, the Malay Archipelago, the island of Madagascar, and the islands of the Indian and Pacific oceans. The Malays are of low stature, less than medium weight, and bear some resemblance to the Mongolians, although the eyes are horizontal, the face is flat, and the hair is less coarse and straight. The beard is scant, the skin varies from a clear brown to a dark olive, and the language is characterized by much phonetic and grammatical simplicity. Arabic characters were used in their writing until comparatively recent times, when the Roman system came into use. They have constituted the best traders of the Malay Archipelago since the 13th century, engage in agriculture and rude manufacture, and build simple but fixed homes. According to their tradition and history, they first occupied portions of Sumatra, where they established the state of Menangkabo, and thence spread in large numbers to other sections, but at present they are tributary principally to Holland.

MALBONE (măl-bōn′), **Edward Greene,** painter, born in Newport, R. I., in August, 1777; died in Savannah, Ga., May 7, 1807. At the age of seventeen years he became a portrait painter in Providence, R. I., but later practiced his art in Boston, New York, and Philadelphia. In 1801 he made a tour through Europe, settling after his return at Charleston, S. C. His productions in portrait painting are counted among the finest in America, one of his best works being "The Hours," in which three female figures represent the Present, Past, and Future. It was purchased for $1,200 and is now at the Athenaeum in Providence.

MALCOLM (măl′kŭm), the name of four kings of Scotland, who reigned between 943 and 1165. Malcolm I. reigned from 943 to 954. He secured the cession of Cumbria from the English king, Edmund I., in 946. Malcolm II. became king in 1003 and died in 1033; Malcolm III. ascended the throne in 1056 and was slain in battle on Nov. 13, 1093; and Malcolm IV. succeeded to the throne in 1153 and died Dec. 9, 1165, in his 24th year.

MALCOLM, Sir John, soldier, author and statesman, born in Eskdale, Scotland, May 2, 1769; died May 30, 1833. In 1783 he went as cadet with the army to India and, while stationed near Madras, devoted his leisure time to the study of Oriental languages. After serving as an interpreter with the Persian staff, he became ambassador to Persia in 1800, and three years later was made president of Mysore, in which position he rendered valuable service to the British. He returned to England in 1812, where he was knighted. In 1817 he became brigadier general in the Indian army and was Governor of Bombay in 1827, but returned to England in 1830 to devote himself to literature. His writings include "Political History of India," "History of Persia," "Memoir of Central India," and "Life of Lord Clive."

MALDEN (ma̤l′dẹn), a city of Middlesex County, Massachusetts, on the Malden River, five miles north of Boston. It is on the Boston and Maine Railroad and has communication by many electric lines. Among the noteworthy buildings are the public library, the post office, the Y. M. C. A. building, and the Home for Aged Persons. The manufactures are very extensive, including principally large quantities of rubber shoes, clothing, carpets, cordage, paper, leather, boots and shoes, and machinery. Malden was settled in 1641, was a part of Charlestown until 1649, and was chartered as a city in 1881. Population, 1905, 37,990; in 1925, 51,789.

MALDIVE ISLANDS (măl′dīv), an archipelago in the Indian ocean, situated southwest of Ceylon and extending a distance of 540 miles from north to south. It includes seventeen groups of atolls, most of which have a fertile soil and rich forests of palm and other trees. They produce tropical fruits and vegetation. Fish abound off the shores and many species of birds are native here. The inhabitants are governed by a Sultan under a British protectorate. They engage chiefly in agriculture and carry on trade relations with Ceylon, India, and other regions of South Asia. The island of Male, or Mohl, contains the capital, and is three-quarters of a mile wide by one mile long. Mohammedanism is the principal religion of the inhabitants, who number about 32,125.

MALHEUR (mȧl-o͞or′), a lake and river of Oregon. The lake receives the water from Silver River and several other streams, but has no outlet to the sea. It is about ten miles wide and eighteen miles long. The Malheur River rises in the vicinity of Malheur Lake. It has a general northeasterly course of 175 miles and flows into the Snake River at the boundary between Oregon and Idaho.

MALIBRAN (mȧ-lê-brän′), **Marie Felicita,** noted singer, born in Paris, France, March 24, 1808; died in Manchester, England, Sept. 23, 1836. She was the daughter of a Spanish singer named Manuel Garcia, attained a reputation in Europe at an early age, and appeared successfully in New York City, where she married M. Malibran, a French merchant. Later she played and sang on the stage in France, Germany, Great Britain, and Italy, and, after being divorced from her first husband, married M. Bériot, a violinist, in 1836, but died soon after while attending a musical festival.

MALLEABILITY (măl-lê̇-ȧ-bĭl′ĭ-tў̆), the property of matter by means of which it may be beaten or rolled into thin sheets. It is confined almost entirely to metals, and nearly all of the metals possess this property. Gold surpasses all the other metals in malleability and gold leaf is so thin that it is transparent. The malleability of some of the metals is in the following order:

gold, silver, copper, platinum, palladium, iron, aluminum, tin, zinc, lead, and nickel.

MALLERY, Garrick, soldier and ethnologist, born in Wilkesbarre, Pa., April 23, 1831; died in Washington, D. C., Oct. 24, 1894. He completed a course at Yale, secured a law degree at the University of Pennsylvania, and in 1861 enlisted in the Union army. He rose to the rank of lieutenant colonel for valiant service, and in 1870 became brigadier general in the regular army. Subsequently he was placed in charge of the bureau of ethnology at Washington, in which he served with eminent success until his death. His writings include "Parallel in Planes of Culture Between Israelite and Indian," "Calendar of the Dakota Indians," "Sign-Language Among the North American Indians," and "Picture Writing of American Indians."

MALLOCK (măl'lŭk), **William Hurrell,** author, born in Devonshire, England, in 1849; died Apr. 4, 1923. He graduated at Oxford, in 1871, where he won the Newdigate prize with a poem entitled "The Isthmus of Suez." His education was planned to fit him for a diplomatic career, but he became deeply interested in the study of literature, and to prepare himself more fully for that line of work he spent considerable time in the southern and eastern parts of Europe. In 1877 he published "The New Republic," in which he represented a number of prominent Englishmen under disguise and discussed various interesting problems. His "Is Life Worth Living?" a discussion of questions relating to life, its possibilities, and its conclusions, is somewhat pessimistic. Other writings from his pen include "Doctrine and Doctrinal Disruption," "Atheism and the Value of Life," "A Romance of the Nineteenth Century," "Classes and Masses," "Property and Progress," "Social Equality," "Aristocracy and Evolution," and "New Paul and Virginia."

MALLORY, Stephen Russell, public man, born at Trinidad, in the West Indies, in 1813; died Nov. 9, 1873. He studied law and was admitted to the bar in Florida, where he became judge of probate. President Jackson appointed him inspector of customs at Key West and in 1851 he was chosen United States Senator as a Democrat, serving until 1861, when he became Secretary of the Navy in the Confederate States. After the war he was taken prisoner, but was pardoned in 1867, and practiced law the remainder of his life.

MALLORY, Stephen Russell, public man, born in Florida, Nov. 2, 1848; died Dec. 23, 1907. He was a son of Stephen R. Mallory and entered the army of the Confederate States in 1864. The following spring he was transferred to the navy as midshipman. After the close of the war he studied at Georgetown College, D. C., where he graduated in 1869, and was soon after admitted to the bar. He settled at Pensacola to practice law. In 1876 he was elected a member of the lower house of the State Legislature, became a State senator in 1881, and after 1890 served as a United States Senator. He has taken an active and progressive part in national legislation.

MALLOW (măl'lō), a family of plants, consisting mostly of herbs and shrubs, but including a number of trees. About 800 species have been described, most of which are widely distributed, but the largest representation is in the warm climates. In North America this family is represented by about 125 native species and about a dozen more have been introduced. To this family belong the *rose mallow* and the *hollyhock,* both ornamental plants, as well as the *okra,* which produces edible pods that are used in the southern part of the United States. The plants that produce cotton are classed with the mallow family and belong to the species known as *marsh mallow.* The *musk mallow* is quite frequent in America and is characterized by a musklike smell. See **Marsh Mallow.**

MALMÖ (målm'ē), a seaport city of Sweden, capital of the province of Malmöhus, situated across the sound from Copenhagen. The noteworthy buildings include the Church of Saint Peter, the governor's residence, the public library, the city hall, and many schools. It has a large number of important steamboat and railway lines, a growing commercial trade, and extensive manufactures of machinery, cotton and woolen goods, clothing, spirituous liquors, and wearing apparel. The general facilities include a public library, electric street railways and lights, and an excellent system of public education. The inhabitants are chiefly Lutherans. Malmö has belonged to Sweden since 1658. Population, 1906, 75,691; in 1919, 82,861.

MALONE (må-lōn'), **Sylvester,** a clergyman born in Ireland; died in Brooklyn, N. Y., Dec. 20, 1899. He came to the United States in 1838. He secured a liberal college education, was ordained to the priesthood of the Roman Catholic Church in 1844, and three years later became rector of the Church of Saints Peter and Paul, Brooklyn, a position he held until his death. In 1894 he was made regent of the University of New York. Malone was intensely American, supported the public school system, and possessed marked ability as a pulpit orator.

MALORY, or **Mallore, Sir Thomas,** author, flourished in the 15th century. He appears to have been knighted by Edward IV. about 1470, though little is known of his life. Writers agree in the view that he was a Welshman and he is credited with the authorship of "Morte d'Arthur," which he probably translated from older French writings. It contains the stories of Arthur and the Round Table and was utilized by Tennyson in his "Idylls of the King." The original of Malory is written in the old style of English, and the following is the full title published in the first edition: "The noble and joyous book entytled Le Morte Darthur notwythstondyng it treateth of the Byrth, Lyf, and Actes of the Sayd Kyng Arthur, of his noble Knyghtes of the Rounde Table, theyr mervayllous Enquestes and Adventures, th' Achyevyng of the Sangreal, and in th' ende the dolorous Death and Departyng out of thys World of them al."

MALPIGHI (mȧl-pē′gē̇), **Marcello,** anatomist, born near Bologna, Italy, March 10, 1628; died Nov. 29, 1694. He studied medicine at Bologna and became professor at the university in that city. Later he taught at Pisa, Messina, and Rome, serving as chief physician in the last mentioned city. He is celebrated as the discoverer of many important facts relating to anatomy, especially that of the transition of the blood from the arteries to the veins. The structure of glands, the layers of the skin, and the subject of vegetable histology became better known through his researches with the microscope, and his name is still applied in medical science to various parts of the epidermis and kidneys.

MALPLAQUET (mȧl-plȧ-kȧ′), a village of France, in the department of Nord, nineteen miles east of Valenciennes. It is noted as the scene of a battle on Sept. 1 , 1709, in which the French under Marshal Villars were defeated by the Dutch and British under Prince Eugene and the Duke of Marlborough. Each army consisted of about 100,000 men. The loss of each was nearly 20,000, but the victory of the allies was signal and resulted in the capture of Mons and Douai.

MALT, the name applied to grain that has been artificially germinated by moisture and heat. It is usually prepared of barley, which is steeped in water and fermented in order to convert the starch of the grain into saccharine matter, and is dried in a kiln, after which it is used in the distillation of whisky and for the manufacture of beer, ale, or porter.

MALTA (ma̤l′tȧ), an island belonging to Great Britain, situated in the Mediterranean Sea, 58 miles south of Sicily and 180 miles north of Africa. The colony of Malta includes Gozo, Comino, and several other small islands. Malta proper has an area of 95 square miles, Gozo about 20, and the total colony 117. Several fine harbors are on the shore of Malta, that of Valetta being the best, and the colony includes one of the most important naval stations of Great Britain. Agriculture is the principal industry, yielding cotton, potatoes, corn, oranges, figs, and many species of tropical fruits. The manufactures embrace lace, cotton goods, clothing, matches, filigree, machinery, and utensils. It has an important commercial trade, Malta being a noted center for reloading and storage. A general public school system is maintained. Other educational institutions include a university and business, professional, and industrial colleges. The language spoken chiefly is Arabic, since the natives are descendants from the Arabians, but Italian is understood and spoken by a considerable number.

The government is administered by a resident governor. Roman Catholicism and Mohammedanism are the prevailing religions. Several railways, telegraph connections, telephone lines, and steamship communication are maintained. Valetta is the capital and most important city.

The history of Malta begins about 1,000 B. C., when it was settled by Phoenician traders, but in 700 B. C. the Greeks conquered it. In 480 B. C. it fell to the Carthaginians, became a Roman colony in 216 B. C., and later was possessed by the Vandals and Goths. The Arabs conquered it in 870 A. D., and in 1814 it was recognized as a British dependency by the Congress of Vienna. Many antiquities are found on the islands of Malta and Gozo, and points of interest are shown to tourists in connection with the visit of Saint Paul, who remained on the island of Malta a period of three months. Population, 1922, 226,690.

MALTA, Knights of, a religious and military order dating from about 1048, when it was founded at Jerusalem in a hospital dedicated to Saint John the Baptist. It partook more largely of a military character some years after its organizatio defended the Christian faith against the Moslems and other unbelievers, but began to decline after the Reformation. The Knights of Malta adopted the Maltese Cross, an eight-pointed figure, as their badge, and on it was the motto, "Pro fide," meaning for the faith. Several modern associations trace their origin to the Knights of Malta, among them the celebrated Red Cross Society.

MALTHUS (măl′thŭs), **Thomas Robert,** political economist, born at Albury, England, in 1766; died Dec. 29, 1834. He studied at Cambridge, where he graduated in 1784, and later was admitted to holy orders. His first curacy was near Albury, in Surrey, and he divided his time between studies in the university and parochial duties. He married and was appointed professor of history and political economy of the East India College at Haileybury, in 1805, where he remained active during the remainder of his life. His writings deal largely of the principle of population. According to his view the population, unless checked, increases in a geometrical ratio, while food and the means of subsistence increase only in an arithmetical ratio. Human life is shortened by vice and misery, hence they serve as natural checks, though it is doubtful whether the evils of a population in excess of support can be avoided without applying some determined means of preventing over-population. His books include "An Essay on the Principles of Population," "Definition of Political Economy," and "Nature and Progress of Rent."

MALVERN HILL (măl′vẽrn), **Battle of,** the last engagement of the Peninsular campaign, on July 1, 1862, after which General McClellan changed his base of operations to the

James River. Malvern Hill is a town of Virginia, about fifteen miles southeast of Richmond. After the battle of Frazer's Farm, McClellan with 85,000 troops took a strong position on the top of a plateau. The Union army was strongly intrenched behind fences, ditches, and hedges. Their batteries and infantries commanded the slopes, which the Confederates had to ascend to make an attack. It was planned to move in a uniform and concerted attack, but the Confederate army was distributed so General Lee's order could not be communicated promptly to the different lines, and consequently the attack was not simultaneous. The brunt of the battle was borne by Generals Magruder and Hill, who led charge after charge, but the heavy artillery fire made their efforts of no avail. Heavy firing continued until nightfall, when McClellan withdrew to Harrison's Landing, thus ending the Seven Days' battles. The loss on both sides was heavy, and the result was that the attempted capture of Richmond failed.

MAMARONECK (mȧ-măr'ō̇-nĕk), a town of New York, in Westchester County, on Long Island Sound, twenty miles east of New York City. It is on the New York, New Haven and Hartford Railroad and is a popular residential suburb of New York City. Besides many handsome dwellings, it has a number of fine schools and churches, and is the seat of the Larchmont Yacht Club. Population, 1922, 5,090.

MAMELUKES (măm'ē̇-lūks), or **Mamalukes,** a term applied by the Arabians to the white slaves of Egypt, who were introduced originally into that country from Asia Minor in the 13th century. At first they were used as a mounted bodyguard of the Sultan, but afterward became the regular cavalry of Egypt. They increased in power so rapidly that in 1254 one of their number became the Sultan of Egypt. The Mameluke dynasty ruled Egypt and Syria until 1517, when it was overthrown by Selim I. Though their government was marked more or less by violence and war, it is noted in history as the most enlightened since the time of the Pharaohs. Under their administration cities rose to much prosperity, irrigation canals were established, a postal system was organized, manufactures were encouraged, and many industrial arts were promoted by the government. Both in Cairo and Alexandria are magnificent mosques that date from their time, while their works in metal, clothing, and utensils show them to have been both ingenious and enterprising. Even after their downfall, in 1517, they continued to be the virtual ruling class in Egypt, and in 1798 they made a memorable charge upon Napoleon in the Battle of the Pyramids. Mehemet Ali, Viceroy of Egypt, treacherously massacred 470 of the most important Mameluke princes in 1810, and soon after they practically disappeared from history. Mameluke is a term now applied in Turkey to a male servant, usually a Circassian slave.

MAMMALIA (măm-mā'lĭ-ȧ), the name given by Linnaeus to the highest class of the animal kingdom, now commonly employed by zoölogists to describe all those that possess mammae, enabling them to suckle their young. The term is sometimes applied erroneously to all quadrupeds. This classification is incorrect for the reason that some amphibians, as frogs and newts, and some reptiles, as lizards and crocodiles, are four-footed, but they do not possess mammary glands. On the other hand, the whales are not four-footed, but are allied to the warm-blooded quadrupeds, and like them bring forth their young alive and suckle them. The term is therefore properly applied to all animals that have red, warm blood, of which the female produces milk by the mammary glands, such as seals, bats, warm-blooded quadrupeds, and mankind. In mammals the skin is covered more or less with hair, which ranges from spines and bristles to the finest wool and silky down. Lips conceal the mouth, which is fitted for chewing by means of enameled teeth or equivalent bone formations.

The skeleton of mammals generally agrees with that of man in having solid bones, or, when hollowed, the bones are filled with marrow, while the bones of the face are immovably fixed to each other. Most of the species have five toes. The front limbs are present in all mammals, but in some species, as the manatees and dugongs, the hind limbs are rudimentary or wanting completely. The respiration is by lungs, the diaphragm is complete, and the heart has two auricles and two ventricles. Different classifications have been made of mammalia by Linnaeus, Cuvier, and other writers. The classification made by Cuvier contains seven orders, as follows: Bimana, Quadrumana, Carnassiers, Marsupialia, Rodentia, Edentata, Pachydermata, Ruminantia, and Cetacea.

MAMMOTH (măm'mŏth), a large extinct elephant which closely resembled the Indian elephant, of which fossil remains have been found in the northern part of North America, Europe, and Asia. The first mammoth discovered was found in 1799 on the shores of the Lena River,

MAMMOTH.

where it was imbedded in ice, and since then many others have been discovered. In 1806 a mammoth in good condition was found enveloped in ice, which was afterward cut out and given a careful examination. The bones were not only intact, but the muscles, skin, hair, and internal organs were in a good state of preservation. Subsequently great numbers of bones and tusks have been taken from the northern coast of Asia, and from islands in the Arctic Ocean adjacent to Siberia. The extinct mammoth elephant had an average height of about thirteen feet and a length of fifteen feet, and its tusks extended outward in a curved form to the length of eight feet. The hair was tufted and thick and about a foot in length, and a finer wool was underneath the outer growth.

Writers generally agree in expressing the view that the average size of the mammoth was fully twice as large as the elephants now living. These animals lived before the glacial period, but seem to have been common for a long time after that period. The early cave dwellers of Europe utilized their tusks in making weapons and for engraving on them articles of ornament and utility. They were so abundant in Asiatic Russia that the fossil ivory found there became an article of commerce in the early part of the 19th century, although these remains were offered in the market as early as the 10th century. The extermination and disappearance of these species is assigned to changes of climate, but the disappearance of forests and the disadvantage of their great size in battling against flesh-eating animals and the advance of settlements are other probable causes. The remains of a mammoth found in 1846 had been inclosed apparently in ice immediately after death, and its flesh was in such a good state of preservation that it was utilized as food for dogs. The Russian government preserved some of the vital organs and the skeleton, which are now at the Royal Museum in Saint Petersburg.

MAMMOTH CAVE, a remarkable cave near Green River, about 82 miles southwest of Louisville, Ky. It is formed in the limestone region, which stretches through Indiana, Kentucky, and Tennessee, covering about 6,000 square miles. Exploring parties have penetrated fifteen miles in the cave, but the main cave is only about three miles long. It is estimated that all the rooms and their windings would permit traveling a distance of 175 miles. The largest apartment, known as the Chief City, is 125 feet high, 287 feet wide, and 544 feet long. A connection seems to exist between the Green River and the cave, since the water found in various parts of different chambers rises and falls in unison with that river. In the main it is dry, but there are several rivers and lakes, the largest of the former being Echo River, which is about three-fourths of a mile long and in places about 200 feet wide. The cave is well ventilated and has many beautiful halls with stalagmite and stalactite formations. Some of the domes reach a height of 300 feet, notably Lucy's Dome and the Egyptian Temple. Several species of animals are found in the cave, among them rats, wingless beetles, and grasshoppers, and amblyopsis fish, all of which are destitute of sight. A hunter by the name of Hutchins discovered Mammoth Cave in 1809.

MAN, a term used to designate the human race, as distinguished from other forms of animal life. In zoölogy it is applied to a primate mammal, representing a special family of the genus *Homo.* It is recorded in the Scriptures that God created man in his own image on the sixth day of creation. At that time he was a creature little lower than the angels, but was driven from the Garden of Eden because of partaking of forbidden fruit, on account of which he became liable to death. It is further detailed that the duration of human life shortly after the expulsion from the Garden was nearly 1,000 years, but it was gradually curtailed on account of the wickedness of the antediluvian world until the limits which still continue were reached. By a plan of salvation man was given a Savior, and those believing on him should overcome the evils of Adam's sin, thereby securing everlasting life of the material body after death. The Jewish race was selected as a special people by God, from whom the Savior should descend, though there is some difference in opinion as to whether the Messiah has appeared, Christians holding that Jesus is the Savior.

Darwin accounts for man's creation through a process of evolution from a species of mollusks belonging to the *Ascidia.* From these he traces the line of ascent through the lancelet fish, later through the ganoids and other fish; thence up through the amphibians, reptiles, and birds; thence the line of ascent is through the monotremata, the lowest mammals, the marsupialia, the placentia, the lemurs, the simiidae, and finally the anthropoid apes. Naturalists have long discussed the question as to whether man constitutes a single species with several varieties, or more than one species. The general view is that there is but one species, and that all varieties descended from a single parent stock. Blumenbach divided mankind into five races—the Caucasian, Mongolian, Ethiopian, American, and Malay. Cuvier reduces them to three primary races, but mentions three secondary races. The primary races, according to Cuvier, are Caucasian, Mongolian, and Ethiopian, while the secondary races embrace the Malay, American, and Australian.

Accredited writers generally agree upon the points of similarity between man and other animal forms, as well as upon their differences. The points of similarity briefly stated include the functions of animal life and instinct; appetites, sensuous emotions, and emotional language; power of sensation and of faint reproductions in imagination; sensuous memory and dim sense perceptions; power of organic interference; and organic volition. The points of difference that distinguish man from the mere animals are abstraction, intellectual perception, reflection, self-consciousness, intellectual memory, judgment, intellectual synthesis and induction, intellectual intuition, higher emotions or sentiments, rational language, and a true power of will. Man is also distinguished by his erect position and in that he is tool using. In the manufacture and use of tools he has undergone a series of marked progressions, the earlier consisting of flakestones and cracked bones. He is the only living being that uses fire, though fire may exist without the productive energies of man in the form of volcanic action, spontaneous combustion, and lightning.

Many of the primitive tools of man have been found in caves and alluvial deposits along with the remains of tropical fauna, like the hippopotamus, elephant, and lion. Discoveries of this character have been made in continental Europe, from which it is taken that the climate of that part of the earth was at one time similar to the region of the Equator. Geologists approximate the time at 50,000 years. That this long space of time has elapsed since man first left traces of his existence is verified by the remains of Arctic animals that were deposited above tools made by man, which have been found with the remains of tropical animals both in America and Europe. From this circumstance it is evident that the glacial period visited America and Europe after man had made considerable progress in constructing and using tools. Those holding this view generally agree that the days mentioned in the Scriptures as the distinct times for creating different objects and animals correspond to vast periods of time, thus establishing a fair agreement between science and the biblical view of creation.

MAN, Isle of, an island in the northern part of the Irish Sea, about midway between Ireland, Scotland, and England. It has a length of 33 miles, a breadth of 12 miles, and an area of 226 square miles. A chain of mountains with a general elevation of 2,000 feet stretches along the eastern shore, Snaefell, 2,024 feet high, being the culminating peak. Fully two-thirds of the surface is under cultivation, the principal agricultural products being wheat, oats, barley, rye, and fruits. It has deposits of zinc, lead, iron, and limestone. Cod and herring fishing is an important industry. The manufactures include machinery, cotton and woolen goods, utensils, wearing apparel, and earthenware. The government is administered by local authorities under the supervision of the crown, and laws become effective only after publication. Acts of the British Parliament do not affect the island unless it is specially mentioned. A Celtic dialect known as the Manx language is still spoken, but the English is understood by most of the people and is coming gradually into use. Douglas, the principal seaport city, is the capital and has a large railroad and steamboat commerce. Railroad lines connect Douglas with Peel, Castletown, Ramsey, and other cities. A small island south of the Isle of Man is called the Calf of Man. Welsh kings governed the Isle of Man from the 6th to the 9th century, when it came into the hands of the Scandinavians, but in 1266 it was ceded by treaty to the Scotch king, Alexander III. The government of Britain purchased the Isle of Man for $350,000 in 1765, and all special privileges were ceded by the duke in 1829. Population, 1922, 54,827.

MANAGUA (mä-nä'g̃wä), a city of Central America, capital of Nicaragua, on a railway at the southern shore of Lake Managua. The lake is forty miles long and from six to fifteen miles wide. It communicates with Lake Nicaragua through the Tipitapa River. The city is surrounded by a fertile region and has a large trade in coffee and sugar. It was made the capital in 1855. Population, 1922, 34,908.

MANAR (mȧ-när'), **Gulf of,** an inlet of the Indian Ocean, located between Ceylon and the southern part of India. It is separated from Palk Strait by a low reef called Adam's Bridge, which is situated between the islands of Manar and Rameswaram.

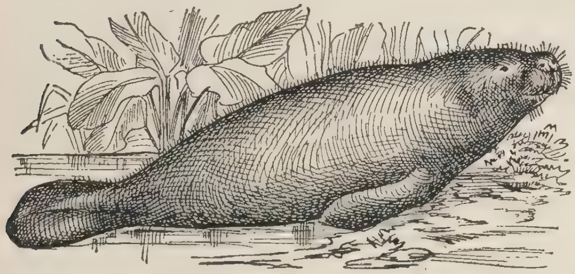
MANASAROWAR (mȧ-nä-sä-rō̇-wăr'), a lake of Asia, in Tibet, located north of the Himalaya Mountains. It is situated between the sources of the Indus and the Brahmaputra and the overflow is carried through the Sutlej River. The lake is about twelve miles wide and eighteen miles long and is held sacred by the Tartars and the Hindus, who make pilgrimages to it.

MANASSEH (ma-năs'seh), eldest son of Joseph and progenitor of the tribe of Manasseh. This tribe numbered 52,700 when the children of Israel entered Canaan, being one of the more important subdivisions, and secured possessions tributary to the Jordan. Manasseh was also the name of a King of Judah, who ruled from 696 to 641 B. C. His idolatry caused the Hebrews much trouble, after which he was carried into Babylonian captivity, but subsequently was successful in securing his release through prayer.

MANATEE (măn-ȧ-tē'), or **Sea Cow,** an animal found in the waters of South America, Australia, and West Africa. It is herbivorous, subsisting especially on sea moss and plants in shallow water. In many respects it shows affinity to the dugong. The body is from eight to twenty feet long, the skin is covered with grayish hair, and the tail is broad and oval formed. The fore limbs are in the form of flappers and are provided with a naillike formation, which aids the animal in moving along the shore or at the bottom of the water. It is the custom of manatees to go in herds, but they are extremely inactive and disappear in the water when danger becomes manifest. The mouths and estuaries of rivers are their favorite abode.

where they are hunted for their skins, as well as for their flesh and the oil derived from it. They are not afraid of man and show considerable affection for their young. The manatee may be tamed in captivity.

MANBY, George William, inventor, born at Hilgay, England, Nov. 28, 1765; died Nov. 18, 1854. He took a special military training, served seven years in the militia, and about 1808 invented an apparatus for saving life in case of danger or shipwreck. Two years later he was awarded $10,000 by the House of Commons in recognition of his invention and, after making a number of improvements, he was voted a second award of $25,000. His invention consisted of a form of rope which could be shot from a mortar, and when passing through the air it could be seen by reason of a luminous attachment, thus making it possible to throw life lines at night with assurance that they would be seen by those in danger. Fully 1,000 persons were rescued in shipwrecks by his inventions before his death. He published "An Essay on Shipwrecked Persons" and "Practical Observations of Mariners."



MANATEE, OR SEA COW.

MANCHESTER (măn'chĕs-tĕr), a town of Connecticut, in Hartford County, on the Hockanum River, five miles east of Hartford. It is on the New England Railroad, has an electric street railway system, and maintains systems of sewerage and public waterworks. The chief buildings include the public library, the townhall, and several schools and churches. Among the manufactures are woolen goods, paper, silk, needles, incandescent lamps, and electrical machinery. Manchester was separated from East Hartford and incorporated in 1823. Population, 1900, 10,601; in 1920, 18,370.

MANCHESTER, a city of New Hampshire, one of the county seats of Hillsboro County, on the Merrimac River, 55 miles northwest of Boston, Mass. It is on the Boston and Maine Railroad and on a number of electric railway lines. The site extends along both sides of the Merrimac River, which is joined here by the Piscataquog River, and is well drained and improved by grading and pavements. Among the noteworthy buildings are the public library, the county courthouse, the Federal building, the Roman Catholic cathedral, the Saint Anselm's College, a State industrial school, and many churches and schools. The manufactures include cotton and woolen goods, boots and shoes, hosiery, needles, bread, bags, automobile accessories, and edged tools. An abundance of water power for manufacturing is derived from the Amoskeag Falls of the Merrimac, which have a descent of 55 feet. Manchester was settled by Scotch-Irish in 1722 and was incorporated as Derryfield in 1751. It was renamed Manchester in 1810 and became a city in 1846. Population, 1900, 56,987; in 1920, 78,200.

MANCHESTER, a city of Virginia, in Chesterfield County, on the James River, opposite Richmond, to which it was annexed in 1910. It is on the Southern, the Sea Board, and other railroads. The surrounding country is agricultural and contains productive coal deposits. Among the manufactures are ironware, cotton goods, flour, paper, machinery, furniture, oil, leather, ice, and hardware. In the vicinity of the city are large granite quarries. An abundance of water power is derived from the James River, which has a fall of 100 feet in six miles. Gas and electric lights, waterworks, pavements, and several fine schools are among the improvements. Population, 1920, 9,715.

MANCHESTER, a commercial and manufacturing city of England, in Lancashire, on the Irwell River, thirty miles east of Liverpool. It has extensive railroad connections, maintains modern municipal facilities, and is surrounded by a country which is noted for its productive manufacturing towns. On the opposite side of the Irwell River is Salford, with which it is connected by several viaducts and many bridges. In 1911 Salfield had 231,380 inhabitants.

It is beautifully built and contains much wealth. Among the noteworthy buildings are the Gothic assize court, the townhall, the Royal Exchange, the public library, the perpendicular Gothic cathedral erected in 1422, and the Victoria University, an institution founded by John Owens with a bequest of $500,000, in 1846. The city contains several hundred churches, among them splendid specimens of Gothic architecture, representing the various leading Protestant sects. It has a number of German churches, two Jewish synagogues, and a Greek Catholic church. The educational institutions embrace high schools, professional and business colleges, industrial institutions, and several charitable and benevolent schools. It has many educational and scientific societies and a public library of about 200,000 volumes, these being distributed in several branches for convenient access. In 1887 the authorities erected a beautiful post office in the Renaissance style at a cost of $500,000. Manchester has splendid parks, an electric street railway system, waterworks, pavements, gas works, electric lights, and numerous monuments, among them those erected in memory of Richard Cobden, Cromwell, Prince Albert, and other noted men of Great Britain.

Manchester is particularly noteworthy as an industrial and a wholesaling center. Among the leading manufactures are cotton, woolen and silk goods, steamships, machinery, ironware, spirituous liquors, soap, chemicals, paper, edged tools, and musical instruments. The export and import trade is extensive. Improvements in the city waterworks were made in 1894 at a vast expenditure, and the supply is now drawn from Lake Thirlmere by means of tunnels and aqueducts. The city owns and operates the systems of waterworks, electric lighting, and gas plants and supplies a number of the neighboring towns at a large profit. It likewise owns the electric street railways, but they are operated by a private company at a profit of ten per cent.

The history of Manchester dates back to Roman occupation, when it was a base of military operations, and in the time of Edward III. became a manufacturing town. By the middle of the 18th century the factory system attained a foothold and it was the first town of England in which this system developed. The Bridgewater Canal was constructed in 1576 for the purpose of making an outlet to the sea and establishing convenient connections with the coal and salt mines situated in Cheshire and Lancashire. Railroads were put in operation in 1830, but the Civil War in America interfered greatly with its cotton manufacture, since it cut off its supply of raw cotton. A fine canal and inland harbor were completed in 1894, by which the foreign trade became vastly augmented, though this improvement cost fully $75,000,000. Population, 1921, 714,427.

MANCHESTER SHIP CANAL, an artificial waterway of England, extending from Manchester to Eastham, on the estuary of the Mersey River. It is 26 feet deep, about 600 feet wide at the surface, and 35.5 miles long. The canal was completed in 1894 and on May 21 of that year was formally opened for traffic by Queen Victoria. Ocean steamers of the largest size enter Manchester, which has six miles of wharfage, and dock accommodations equal to 100 acres. The canal was constructed at an expense of $75,000,000, of which one-third was contributed by the city of Manchester.

MANCHURIA (măn-chōō'rĭ-ȧ), a territory in the northeastern part of China. The northern boundary is formed by the Amur River, which separates it from Siberia. It is bounded on the south and the southeast by the Gulf of Liao-tung, Corea, and the Gulf of Corea, and on the west by the Argun River and Mongolia. The total area is about 365,000 square miles. The territory is divided into the three provinces of Liao-tung, Kirin, and He-Lung-Kiang. Shing-yang, in the province of Liao-tung, is the capital of Manchuria. The native race is made up of Manchus, but at present the Chinese predominate. Manchuria has a temperate climate. Though severe in winter, it is healthful and favorable to various industries. The principal productions include wheat, millet, cotton, opium, tobacco, barley, lumber, and indigo.

The natives, known as Manchus, are a Tartar people of Tungusic origin. In the 17th century they invaded and conquered China, which has since been governed by a Manchu dynasty, and the court and official language continues to be that of the Manchus. Russia obtained a lease of several harbors, including Port Arthur, in 1898 and two years later took possession of several ports and interior cities with the view of controlling Corea and the Yellow Sea by an extension of the Trans-Siberian Railway. Subsequently Russia refused to evacuate, but by the treaty of Portsmouth, in 1905, restored all of it to China, except the leased territory of Liao-tung. This treaty gave the Japanese possession of the chief towns, including Dalny, Mukden, and Port Arthur. A large majority of the inhabitants are Chinese. Population, 1922, 16,565,550.

MANDALAY (măn'dȧ-lā), a city of India, the former capital of Upper Burmah, on the Irrawaddy River, 350 miles north of Rangoon. In 1860 the King of Burmah transferred the seat of his government to Mandalay from Amarapura, when its present prosperity began, and in 1886 it was annexed to India by the British. The site of the city is on a fertile plain. It has railway connections, manufactures of silk and other textiles, and is an attraction for many Buddhist pilgrims. Among the interesting buildings are the Aracan Pagoda, several government structures, and numerous mosques. It has been damaged several times by floods and fires, but the city has been growing materially. Electric street railways, telephones, electric lights, and several fine schools and hospitals are among the improvements. The inhabitants include many classes of Asiatics and a small number of Europeans. Population, 1922, 185,761.

MANDAN (măn'dăn), a city of North Dakota, county seat of Morton County, five miles west of Bismarck. It is located on the Missouri River and is on a division of the Northern Pacific Railway. The surrounding country has large interests in farming and stock raising. A good grade of lignite coal is mined in the vicinity. The chief buildings include the high school, the State Reform School, and several churches and business blocks. It was named from the Mandan Indians, who formerly populated a large part of North Dakota, but are now settled on Fort Berthold Reservation at the junction of the Little Missouri with the Missouri River. These Indians were first met by Lewis and Clark, when they were a powerful tribe, but at present they do not exceed 250. In the vicinity of the city of Mandan are numerous prehistoric remains that seem to indicate a former semicivilization. Population, 1925, 5,068.

MANDARIN (măn-dȧ-rēn'), a general name for a Chinese magistrate. It is applied by Europeans to any public official of China, either civil or military. Khan, the Chinese equivalent, implies a public official or character.

MANDINGO (măn-dĭṉ'gō), the name of a tribe of Negroes in West Africa, who dwell in the region located between Monrovia and the Senegal and Upper Niger rivers. They are mixed more or less with Hamites, but have woolly hair and are unusually tall. Their state of society is semicivilized. In religion they belong to the Mohammedans. Many of their towns are walled, the houses are chiefly of clay and adobe brick, and the government is administered by independent states. The language is known as Mandi, but a large number have learned the use of French.

MANDOLIN (măn'dō̇-lĭn), a musical instrument which resembles the guitar, so called from its almond shape. It was first manufactured by the Italians, who now make several varieties, each with different tunings. The *Neapolitan mandolin* is considered the most perfect instrument of this class. It has four strings. The sound is made by a *plectrum* used in the right hand, while the strings are stopped on the fretted fingerboard by the fingers of the left. The compass is about three octaves.

MANDRAKE (măn'drāk), a plant native to Amercia, Europe and Asia, belonging to the order *Solanaceae*. A narcotic poison is found in all of its parts. The root is fleshy, often forked, and described as resembling a human being in general outline. The leaves are lanceolate, beneath which are concealed several pale violet-colored flowers, with a purple bell-shaped corolla. Its fruit is a fleshy, orange-colored berry. Although a very different plant, the *May apple* of North America is sometimes called mandrake. In Europe and Northern Africa the mandrake is gathered for its narcotic properties, which are utilized as a purgative, but the use among professional physicians has decreased materially.

MANDRAKE.

MANDRILL (măn'drĭl), a large and powerful species of baboon, distinguished by having a short tail and a savage disposition. It is native to Africa, found chiefly in the northern and western parts, where it is seen in large troops. The adult male is about five feet tall, when standing erect. These animals have a long muzzle, furrowed with purple and scarlet, and the nose is bright red. The cheeks are enlarged by swellings. They are both strong and cunning. See **Baboon.**

MANETHO (măn'ē̇-thȯ), a historian of Ancient Egypt, flourished in the reign of Ptolemy Soter, at the beginning of the 3d century B. C. He was a priest in Lower Egypt and is the author of two important works, one on the history and the other on the religion of his country. Both books have been lost, but numerous fragments have been preserved by later historians, including Eusebius and Josephus. In the Armenian version of Eusebius is a list of the Egyptian dynasties according to Manetho, the dates of which appear to have been derived from genuine documents, including the sacred books of the Egyptian priests.

MANDRILL.

MANFRED (măn'frĕd), King of Sicily, son of Frederick II., born in Sicily about 1232; died in battle at Benevento, Italy, Feb. 26, 1266. His father died in 1250 and Manfred at once succeeded him as Prince of Tarentum. He served as regent in Italy during the absence of his half-brother, Conrad IV. Later he became regent of Apulia, but continued opposition from the Pope compelled him to take refuge with the Saracens. With their aid he defeated the papal army on Dec. 2, 1254, at Foggia. In 1257 he established absolute sway over Sicily and Naples, and in 1258 was crowned King of Palermo. Papal opposition continued and, as a retaliatory measure, he invaded and conquered Tuscany, but the Pope settled his dominions as a papal fief on Charles of Anjou, brother of the French king, Louis IX., and in a great battle that followed at Benevento he was slain while leading a charge. Manfred was an able warrior and was skillful in tactics. He was universally regarded with admiration by his soldiers.

MANGANESE (măṉ-gȧ-nēs'), a metallic element which is widely diffused, occurring chiefly as sulphide and carbonate and in the form of peroxide. It has a grayish-white color, but by being exposed to air readily oxidizes, and decomposes in water with an evolution of hydrogen. Extensive deposits are found in various countries, especially in Virginia, Arkansas, California, Spain, Moravia, and Germany. Manganese is serviceable under various conditions for numerous purposes, including its use in the manufacture of plate glass, bleaching powder, pottery, and enamel, and for various purposes in analytical chemistry.

MANGE (mānj), a skin disease of various domestic animals, due to the presence of a small mite upon the skin. It is most prevalent among cattle, dogs, swine, and horses. In sheep it is known as *scab,* or *scabes.* The early symptoms are heat and itching, after which the skin becomes bald and sore. In the early stages it may be treated by applying the tincture of belladonna or such tonics as iron or arsenic locally, but where the disease has spread over various parts of the body it is best to plunge the animals in dips or tanks containing solutions of lime and sulphur, or tobacco and sulphur. When arsenic and other poisonous materials are used, they must be diluted and applied with much care.

MANGEL-WURZEL (măṉ′g'l-wûr′z'l), or **Field Beet,** a large beet grown extensively as food for domestic animals. The plant seems to have been originated by propagation in Germany, whence the name. It has a large root and yields from 18 to 25 tons per acre. The roots may be stored in pits or a cool cellar and kept in a good condition until the following spring. It is fed principally to cows, swine, and sheep. From 15 to 25 pounds is the quantity fed to dairy cows per day. The mangel-wurzel has valuable milk-producing properties, hence is fed extensively on the dairy farms of Europe. It is cultivated to some extent in Canada and the United States, especially in the older sections, where it is displacing other forage crops to a good advantage.

MANGO (măṉ′gô), a genus of evergreen trees, belonging to the natural order *Anacardiaceae.* The common mango is native to India and the Malay Peninsula. It attains a height of from thirty to fifty feet, grows rapidly, and has beautiful spreading, glossy foliage. The fruit is about the size of a hen's egg, has a kidney shape, and is used mostly for preserves, pickles, and tarts. In some countries it is eaten as a dessert. The kernel of the fruit is nutritious and is prepared for table use by cooking. Cultivation has greatly improved the mango until now its fruit is agreeable in flavor and highly luscious. About thirty species have been described. Large orchards of mangoes are now grown in the West Indies and several species are cultivated profitably in Florida and California. They can be propagated either by inarching or from the seed. The wood is rather soft, but is used to some extent for building purposes.

MANGOSTEEN (măṉ′gô-stēn), a fruit native to the Molucca Islands, but now cultivated in tropical Asia and various islands of the Pacific and Indian oceans. The tree attains a height of twenty feet, has a firlike appearance, bears large oval leaves, and yields abundantly. More than thirty species have been described. The fruit is shaped like an orange, is similarly partitioned, and has a thick rind. It is a most delicious product, being juicy, cooling, and delicately flavored. The mangosteen is cultivated for the market similarly to the orange.

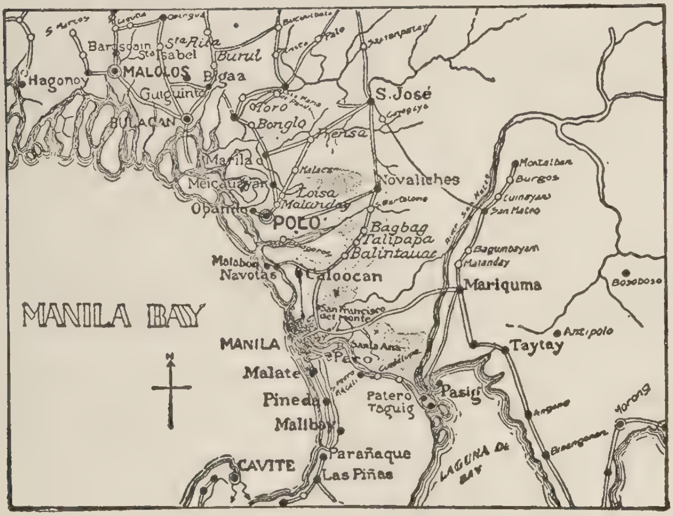
MANGROVE (măṉ′grōv), a genus of tropical trees and shrubs that grow in muddy places on low coasts. It includes several well-marked species, all of which send roots out from the main stem. Some branch off from near the ground, while others send shoots from their branches into the ground beneath and form a peculiar and extensive cluster of vegetable growth. These trees resemble the banyan tree.

MANGO.
A, Flower; *B,* Fruit.

MANHATTAN, county seat of Riley County, Kansas, 52 miles west of Topeka, on the Kansas River and on the Union Pacific and other railroads. It has cement works, foundries, limestone quarries, machine shops, paving, and electric lights and street railways. The chief buildings include the courthouse, Y. M. C. A., federal building, and Kansas State Agricultural College. Population, 1925, 10,112.

MANHATTAN ISLAND (măn-hăt′tạn), a portion of New York City, constituting the borough of Manhattan. It is separated from the mainland on the north and northeast by Spuyten Duyvil Creek and the Harlem River, whence it extends south to New York Bay, being a few hundred yards wide and about thirteen miles long. On the west it is bounded by the Hudson, or North, River, and on the east by the East River. It is connected with Jersey City, N. J., by ferries and a railway tunnel under the Hudson River and with Long Island by the subway under the East River. The latter is also crossed by the Brooklyn Bridge, the Williamsburg Bridge, and the East River Bridge. The total area of Manhattan Island is 22 square miles. Though purchased in 1626 by Peter Minuit for $25, it is at present the most valuable tract of land in North America.

MANILA (mȧ-nĭl′ȧ), or **Manilla**, the most important city and seaport of the Philippine Islands, on Manila Bay, at the mouth of the Pasig River. It is situated mostly on a gently undulating plain and on the land side is surrounded by a semicircle of picturesque hills and mountains. The river divides the city into two parts, separating Binondo from Manila proper, but there is convenient passage by a number of bridges. It has railroad connections with Lingayén Gulf and interior points, while steamboat lines are maintained with the leading commercial centers of the world. The manufactures consist principally of tobacco, cigars, sugar, wearing apparel, machinery, earthenware, cordage, and utensils. These articles and rice, hides, mats, manila hemp, trepangs, leaf tobacco, and fine lumber are exported. Among the imports are spirituous liquors, ironware, lead, silks, and textiles.



Several well-improved streets with fine buildings make up the interior business portion of the city. In the suburbs are beautiful residences of wealthy merchants, but blocks of inferior habitations are scattered throughout the residential sections. The principal streets are paved and have electric street railway lines, public lighting, mains of the public waterworks, and sanitary sewerage. Among the noteworthy buildings are the government offices, the public library, the Federal post office, the cathedral, the palace of the archbishop, the weather observatory, and many schools, hospitals, and churches. It is the seat of the University of Saint Thomas, the College of San Juan de Letrán, and the Hospital of San Juan de Dios. The promenade called the Luneta and several parks are very beautiful.

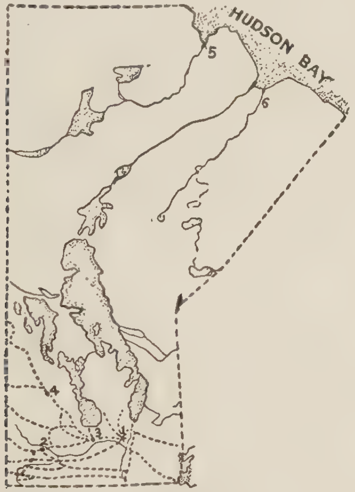
Manila was founded in 1571 by the Spaniards, who fortified it in 1590. It has suffered severely from earthquakes at various times. A destructive hurricane visited it in 1882, when 3,850 houses were destroyed and many persons were killed. Admiral Dewey captured Manila for the Americans on May 1, 1898, by destroying the Spanish fleet in Manila Bay. The inhabitants consist chiefly of Tagals, Chinese, Spaniards, and a number of Americans. Manila includes Binondo, Tondo, San José, Santa Cruz, San Miguel, and a number of other suburbs. Population, 1922, 311,045.

MANILA HEMP, the fiber of several tall perennial herbs of the same genus as the banana and the plantain, which grow in some of the East India islands. They include a number of species, such as the *abaca*, which has large dark green leaves. The fiber is very valuable, the finer grades being used in the manufacture of scarfs, handkerchiefs, and other fabrics, while the coarser is employed in making cordage, such as rope, binding twine, and paper. Manila hemp is an important product in the Philippine Islands, where the abaca grows to a height of fifteen to twenty feet.

MANISTEE (măn-ĭs-tē′), a city in Michigan, county seat of Manistee County, on Lake Michigan, at the mouth of the Manistee River, 140 miles northwest of Lansing. It is on the Manistee and Northeastern, the Père Marquette, and other railroads. Regular steamboat communication is maintained with Chicago and the chief cities on the Great Lakes. Among the noteworthy buildings are the county courthouse, the high school, the public library, and many business blocks. It has electric street railways, city waterworks, several hospitals, and an industrial home. The manufactures include cigars, machinery, clothing, furniture, and utensils, but its salt works are the most important industry. The surrounding country is agricultural and fruit growing, and contains deposits of salt, some of which are fully thirty feet thick. It has a growing trade in merchandise. Manistee was settled in 1841 and incorporated in 1869. Population, 1904, 12,708; in 1920, 9,690.

MANITOBA (măn-ĭ-tō′bȧ), a Province of the Dominion of Canada, bounded on the north by the Northwest Territories, east by Hudson Bay and Ontario, south by Minnesota and North Dakota, and west by Saskatchewan. The location is nearly in the center of the continent of North America. In shape it is rectangular, being about 270 miles wide and 760 miles long. The area is 255,732 square miles, of which 15,600 square miles are water surface.

Description. Manitoba is located almost entirely in the great central prairie region. The surface is mostly of a gently rolling character, but there are ranges of the Laurentian Mountains in the northeastern portion, where the country is broken and hilly. The slope is gently northward, the height above the sea being 800 feet in the south and 200 feet in the north. A low escarpment about 500 feet above the sea separates the Laurentian area in the northeast from the plains of the west. Formerly a post-glacial lake, called by geologists Lake Agassiz, covered nearly all of the surface and much of the country toward the north, causing a deposit of clay and silt, now overlaid by two to four feet of black vegetable mold, hence Manitoba is noted for its fertile wheat lands.



MANITOBA.

1, Winnipeg; 2, Brandon; 3, Portage la Prairie; 4, Dauphin; 5, Fort Churchill; 6, Fort Nelson. Chief railroads are shown by dotted lines.

The drainage is principally by the Red River of the North, which enters the Province from the United States, and discharges into Lake Winnipeg. It rises in Minnesota and is navigable for small boats from Fargo, N. D., to Winnipeg, where it receives the inflow from the Assiniboine, which drains the western part of the Province. The Pigeon and Berens drain the northeastern part, and the Swan is the principal river of the northwestern section. All of the streams have cut narrow channels through the soft drift deposits, being from thirty to ninety feet below the surrounding plains, and the flow of water is not rapid. All of the drainage belongs to the Hudson Bay system and is carried by the Nelson River, which is the outlet of the lakes in Manitoba. These lakes include many sheets of beautiful water, but the shores, as a rule, are low, merging into the prairie beyond. They include Lake Winnipeg, 270 miles long; Lake Manitoba, 135; and Lake Winnipegosis, 150.

The climate is continental, but the dryness of the air has a favorable effect upon the extremes of heat and cold. In winter the thermometer often registers 25° below zero, sometimes even 50° below zero, and the extremes of summer are from 90° to 96°. At Winnipeg the mean temperature for January is 5.2° below zero and the mean for July is 65.9°. Though the mean annual rainfall is only 17.4 inches, the precipitation is largely during the growing season. The snowfall is light. Seeding begins about the middle of April, before the frost is fully out of the ground, and the staple small grains mature during the summer.

Mining. Along the Souris, or Mouse, River, in the southern part, are extensive deposits of lignite coal. A large part of the mining is by settlers for domestic use, but considerable quantities are shipped for consumption to the towns and cities of the Province. Limestone is found in the eastern part, where quarries are worked to obtain material for building and general construction purposes. Crystalline rocks are worked to some extent in the Laurentian system. Other minerals include gypsum, iron, copper, lead, and silver; these are not worked extensively at present.

Forests and Fisheries. Belts of timber extend along the streams, but the most valuable forests are found in the eastern part, extending into Manitoba from Ontario. Timbered areas of more or less value are met with on the Brandon Hills, on the Turtle Mountains, and in the northwestern part of the Province.

The interior lakes are rich in fisheries. Nearly half of the output is made up of whitefish. Other important catches include the pickerel, pike, trout, sturgeon, and maskinonge. The fish taken from the lakes not only supply the markets of Winnipeg, but considerable quantities are shipped to towns and cities farther west.

Agriculture. The industrial interests of Manitoba are vested largely in agriculture. All of the hardier vegetables and grains are raised profitably, but the season is not sufficiently long for corn. Wheat of a superior grade is grown and the area cultivated in this cereal greatly exceeds that devoted to all other crops. Oats takes rank as the second largest crop. Other products include barley, flax, hay, rye, and potatoes. The larger fruits, such as apples, are not grown extensively, but cherries, plums, strawberries, currants, and other small fruits yield abundantly.

Large interests are vested in stock raising, owing to the growth of many nutritious grasses. The dry fall weather cures the standing grass and cattle feed upon it throughout the winter, though they do better when sheltered and fed during the colder part of the year. Dairying has developed to a considerable extent and the products of dairy farming include butter, milk, and cheese. The interests vested in cattle are much greater than those devoted to rearing horses, though the latter are grown profitably for domestic use and exportation. Other domestic animals include sheep, swine, and poultry.

MANUFACTURING. The manufacturing industry is of comparatively recent development and the establishments are centered largely in Winnipeg. Flour is an important product and flouring and grist mills are located in Brandon, Portage la Prairie, Winnipeg, and other centers of trade. Whitemouth is in the center of the lumbering district and has large sawmills. Creameries and cheese factories are operated in many of the smaller towns. Winnipeg is the most important center of machine and railway shops, grain elevators, and manufactures of earthenware. Other manufactures include furniture, clothing, boots and shoes, farm machinery, cotton and woolen goods, and sewing silk.

TRANSPORTATION AND COMMERCE. The Red River of the North is navigable for small boats south to Winnipeg, but a lock is required for vessels to pass through Saint Andrews Rapids. Extensive transportation facilities are afforded by the lakes, which form the only means of communication in the north central part of the Province. Railroad building has been confined chiefly to the southern and western sections. Three transcontinental railway lines cross the Province from east to west, those of the Canadian Pacific and two trunk lines of the Canadian National Railways. Several railways connect Winnipeg with the leading commercial centers of the United States, and electric railways are in operation in that city and the adjacent country.

Large amounts of merchandise are imported and exported through Brandon and Winnipeg, where customhouse entries are made for shipments passing to and from the United States. However, the greater share of trade is with the seaports of Quebec. The wheat shipments are the most important and these frequently tax the capacity of the transportation systems to their utmost capacity. Winnipeg is the chief railroad and commercial center and is important as a distributing point. The imports embrace chiefly manufactured goods, such as clothing and machinery, and the exports consist largely of live stock, wheat, and oats. Winnipeg has the largest wheat market in Canada.

GOVERNMENT. Manitoba is governed by a Lieutenant Governor, an executive council of five members, and a Legislature comprising a single chamber. Residence and manhood suffrage are the basis of the electoral franchise. The members of the Legislature are elected for four years, and that body has a membership of forty. Judicial authority is vested in the supreme court, which consists of the chief justice and three associates. In addition there are county courts, police magistrates, and justices of the peace. The denser units of population are organized as villages, towns, or cities, depending upon the number of inhabitants. English is the official language.

EDUCATION. The largest expenditures in the Province are for education, which is directed by a council of public instruction. Certain lands in every township were set apart by the government and the income from this is applied to the support of the schools. All the settled districts have well-established public schools. Religious instruction is permitted in schools at certain hours of each day, but pupils are not required to attend the religious exercises. Collegiate institutes for advanced education are located at Brandon, Winnipeg, and Portage la Prairie, and a provincial normal school for teachers is at Winnipeg. The University of Manitoba, located at Winnipeg, is a flourishing institution of higher learning.

INHABITANTS. Many nationalities are represented in Manitoba. Those born outside of the Dominion of Canada include principally people from England, Austria, the United States, Russia, Scotland, Iceland, and Ireland. All of the leading Christian denominations are represented, the most numerous being the Presbyterians, Methodists, Episcopalians, Roman Catholics, Lutherans, and Baptists. Winnipeg, in the southeastern part, is the capital and largest city. Other cities include Brandon, Portage la Prairie, West Selkirk, Dauphin, and Saint Boniface. In 1901 the total population was 254,921, of which 22,170 were Indians. Population, 1921, 610,118.

HISTORY. The first permanent settlement in Manitoba was made at Selkirk, on the Red River, in 1812. The entire region known as the Northwest Territory was acquired from the Hudson Bay Company in 1869, and it was transferred by the general government to Canada. Previous to that a number of settlements had been made in different places, but the largest one was near Fort Garry, now Winnipeg. While the transfer of territory was under consideration, the region was the scene of considerable violence and contention. At that time it had a French-speaking population and this element, under the leadership of Louis Riel, laid claim to certain property titles that were in dispute. In 1870 the government sent a military force under Colonel Wolseley to quash the disturbances and Riel, fearing capture, fled. Railway lines were built into Manitoba from the United States in 1878, including those of the Northern Pacific and the Great Northern, and the Canadian Pacific was constructed about the same time. A second uprising under Riel took place in 1885, but it was soon suppressed and Riel was captured and hung.

Formerly a majority of the inhabitants were Catholic in religion, but a large immigration of

Protestants was attracted to the country by the development of the natural resources. These conditions caused separate schools to be maintained, but the Legislature abolished the separate school systems in 1890 and established a provincial system without regard to religious lines. The Catholic leaders appealed to the government of England, but the whole matter was referred back to the Dominion, by which it was directed that the former school system be restored. However, the Province refused to obey the order on the ground that separate schools would be too expensive as well as quite unsatisfactory, and the controversy was settled by giving the Catholic minority certain privileges desired by them, though the unified school system was retained. In 1870 it was admitted into the confederation forming the Dominion of Canada. A large portion of Keewatin, about 182,000 square miles, was annexed in 1912. At a general election, in 1923, prohibition of the sale of liquors was defeated.

MANITOBA, a large lake of Canada, in the Province of Manitoba, sixty miles southwest of Lake Winnipeg. It is 125 miles long and 25 miles wide. The area is 1,900 square miles. It is forty feet higher than Lake Winnipeg, into which it discharges through the Saskatchewan, or Dauphin, River. This river expands in about the middle of its course to form Saint Martin's Lake. The White Mud River is the largest stream that flows into Lake Manitoba.

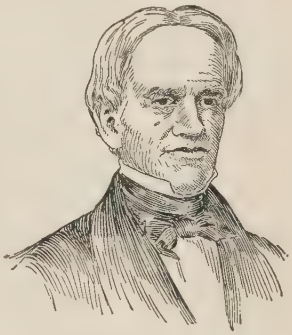
MANITOU (măn'ĭ-tōō), a town of Colorado, in El Paso County, six miles northwest of Colorado Springs, on the Colorado Midland and the Denver and Rio Grande railroads. It is situated 6,310 feet above the sea and is renowned for the wonderful scenery in its vicinity. The site is at the base of Pike's Peak and near it are many canyons, Monument Park, and the Garden of the Gods. It is the terminus of the Pike's Peak Cog Railway. Many tourists visit the locality. Population, 1920, 1099.

MANITOULIN ISLANDS (măn-ĭ-tōō'-lĭn), an island group in the northern part of Lake Huron, including Drummond, Cockburn, Grand Manitoulin, Fitzwilliam, Lonely, and several other islands. The entire group belongs to Canada, except Drummond Island, which forms a part of the State of Michigan. The islands are largely barren, but contain excellent fisheries. Drummond is especially noted as a favorite summer resort. More than one-half of the inhabitants are Algonquin Indians. Grand Manitoulin is 90 miles long.

MANITOWOC (măn-ĭ-tô-wŏk'), a city of Wisconsin, county seat of Manitowoc County, on Lake Michigan, about 150 miles north of Chicago. It is on the Père Marquette, the Soo, and the Chicago and Northwestern railroads and has communication by steamboats on the Great Lakes. Among the principal buildings are the county courthouse, the public library, the high school, the county insane asylum, and a Polish asylum for orphans. The manufactures embrace glue, ironware, flour, machinery, leather, edged tools, and earthenware. The city is surrounded by a fertile farming country. It has a large and growing trade in produce and merchandise. Manitowoc was incorporated as a city in 1870. Population, 1920, 17,563.

MANKATO (măn-kā'tô), a city in Minnesota, county seat of Blue Earth County, on the Minnesota River, 85 miles southwest of Saint Paul. It is on the Chicago Great Western, the Chicago, Milwaukee and Saint Paul, and the Chicago, Saint Paul, Minneapolis and Omaha railroads. It is the seat of the State Teachers College and of Bethany College (Lutheran). The noteworthy buildings include the Saulsbaugh Hotel, the county courthouse, the Federal building, the Carnegie public library, the Saint Joseph's Hospital, the high school, and the Immanuel Hospital. Among the manufactures are clothing, flour, cement, dairy products, machinery, candy, tile, incubators, and earthenware. It has good municipal facilities, such as electric lights, waterworks, pavements, and street railways. Mankato was settled in 1853 and incorporated in 1868. Population, 1905, 10,996; in 1920, 12,469.

MANN, Horace, educator and statesman, born in Franklin, Mass., May 4, 1796; died in Yellow Springs, Ohio, Aug. 2, 1859. He was the son of a farmer who was in limited financial circumstances, but by perseverance managed to secure a good education. In 1819 he graduated from Brown University, studied law, and in 1827 was elected to the Legislature of Massachusetts, where he took a decided position in favor of religious liberty and the construction of railways. He was a leader in the movement to found the State lunatic asylum. Shortly after he removed to Boston, where he was elected to the State senate, serving in that body until 1837, and for a portion of the time was its president. In the latter year he was elected secretary of the newly appointed board of education, in which position he served until 1848, when he succeeded John Quincy Adams as a member of Congress, serving in that body until 1852. The following year he became president of Antioch College, at Yellow Springs, Ohio, where he labored with much success until his death.


HORACE MANN.

Mann was distinctly practical. His educational theories and human sympathy give him a place among the most eminent educators of America. He was consulted in the establishment of schools, not only in his own State, but in many of the states of the central west, where he was called successively to lecture and devise plans for the building of educational institutions and the establishment of systems of schools. His writings are held in high esteem by educators, and are often quoted as authoritative on many important phases of educational and psychological questions. In struggling against sectarianism he wrested education from the hands of authority and placed it in the hands of science. His masterful plea in favor of trained and competent teachers led to the building of the American normal schools, which owe their existence to him. Among his writings are "Twelve Annual Reports," issued while secretary of the Massachusetts board of education, "Slavery: Letters and Speeches," "A Few Thoughts for Young Men," and "Powers and Duties of Women."

MANNA (măn'nȧ), a sweetish substance obtained by making incisions in the stems of various trees or shrubs, especially the stems of the manna ashes of Southern Europe. The different species of manna ash are cultivated largely in Calabria and Sicily, whence the largest amount of commercial manna is derived, though they are grown in plantations in other portions of Europe and in some sections of Asia and Africa. In most cases the incisions are made about the first of August, and during warm weather the manna oozes from the cuts and forms hardened flakes or lumps that cling to the tree. Its taste is sweetish, with a slight acridity, and the odor resembles that of honey. The best quality of flake manna comes from cuts made in the upper part of the stem. It has a pale yellow color, is somewhat transparent, and consists mainly of sugar, mucilage, resin, sweet gum, and not more than four per cent. of inorganic matter. Several other species of trees yield manna, but the product differs somewhat in substance and consistency. The different varieties are used for food, but more particularly as an adjunct in cases of treatment by other medicines, the manna serving as a food for those constitutionally weak. The eucalyptus tree of Australia and several species of camel's thorn found in Persia, Arabia, and Egypt yield a manna less nauseous than the manna ash product.

It is related in the Scriptures that the Israelites were supplied by God with a manna in the wilderness, while journeying to the promised land. The supply was furnished during the forty years spent in the Arabian wilderness, and this product has been identified with the saccharine substance produced by the plants of Arabia, since it is related that the manna of the Israelites melted when the sun became hot, and, if left to the next day, bred worms and stunk. This class of manna is now secured from a kind of tamarisk, and is eaten by the people of Southwestern Asia in place of honey.

MANNHEIM (män'hīm), or **Manheim,** a city of Germany, in the grand duchy of Baden, near the confluence of the Neckar and Rhine, forty miles southwest of Frankfort. It is an important commercial city, has extensive docks, a good harbor, and important railroad connections. The manufactures embrace cotton and woolen goods, leather, machinery, paper, sugar, tobacco, chemicals, and musical instruments. Among the principal buildings are the townhall, the gymnasium, the Imperial Theater, the public library, and the railway station. Fine monuments of Bismarck and William I. are located in prominent places. It has statues of Schiller and Dalberg. The city has modern municipal facilities, including telephones, sewerage, waterworks, and electric street railways. Mannheim was founded in 1606 and became a part of Baden in 1801. Population, 1920, 193,379.

MANNING (măn'nĭng), **Henry Edward,** Catholic Cardinal, born in Totteridge, England, July 15, 1808; died Jan. 14, 1892. He graduated at Oxford College in 1830, was made rector of Lavington in 1834, and soon became noted as an eloquent minister of the Church of England. In 1851 he went over to the Roman Catholic faith and, after studying at Rome, was ordained priest. He became Archbishop of Westminster in 1865, advocated papal infallibility with much vigor, and in 1875 was made a cardinal. Besides taking an eminent part in Catholic church work, he advocated temperance reform, instituted parochial schools, and founded numerous charitable and benevolent institutions. His writings embrace "The Grounds of Faith," "True Story of the Vatican," "Temporal Power of the Pope," "Eternal Priesthood," and "The Catholic Church and Modern Society."

MAN-OF-WAR, the name applied to a naval vessel that is commissioned by a government and fitted for service in war. It is considered that a vessel of this kind belongs to the soil of the nation whose flag it carries, and by the law of nations possesses greater authority than that possessed by the ships under control of private persons or companies. Vessels that make war but do not belong to an acknowledged government are classed as pirates or privateers.

MANS, Le. See **Le Mans.**

MANSFIELD (mănz'fēld), a city in Ohio, county seat of Richland County, 78 miles southwest of Cleveland. It is on the Erie, the Pennsylvania, and the Baltimore and Ohio railroads. The chief buildings include the public library, the county courthouse, the Y. M. C. A. building, the Ohio State Reformatory, and many schools and churches. It has communication by electric railways, gas and electric lighting, brick and macadam pavements, and the Sherman-Heineman Park. The manufactures include cotton textiles, furniture, woolen goods, farming machinery, paper, flour, bread, candy, and hardware. Mansfield was settled in 1808 and incorporated in 1828. It was the home of John Sherman. Population, 1900, 17,640; in 1920, 27,824.

RICHARD MANSFIELD.

MANSFIELD, Richard, actor, born on the German island of Helgoland, in the North Sea, May 24, 1857; died Aug. 30, 1907. His early youth was passed in the United States, but later he accompanied his mother, Madame Rudersdorff, to England, where he attended school, and made his first appearance on the stage in London. Later he returned to the United States, and since 1878 has been known as one of the most prominent actors of America, appearing in New York, Boston, and many other principal cities. His appearance was pleasing, particularly in "Mikado," "Dr. Jekyll and Mr. Hyde," "The Scarlet Letter," "A Parisian Romance," and "Ten Thousand a Year."

MANSFIELD, William Murray, Earl of, jurist, born in Scone, Scotland, March 2, 1705; died March 20, 1793. He studied at Oxford, where he secured a degree in 1730 and, after studying law, was called to the bar in 1731. He was elected to the House of Commons in 1743, was made Chief Justice in 1756, and in the same year entered the House of Lords and the Cabinet. In 1776 he was made Earl of Mansfield. His decisions and public addresses made him unpopular among the common people.

MANSON, Patrick, physician, born in Aberdeen, Scotland, Oct. 3, 1844. He studied in his native city and at Edinburgh, and became known by his investigation of the cause of malaria and other diseases common to tropical countries. As a parasitologist he became distinguished, and was the first to announce the hypothesis that the mosquito is the host of the malarial parasite at one stage of its existence, hence an active agent in diffusing the disease. In 1897 he was made medical adviser to the colonial office of Great Britain. He published a work entitled "Tropical Diseases."

MANTEGNA (mȧn-tȧn'yȧ), **Andrea,** noted painter, born near Padua, Italy, in 1431; died in Mantua, Sept. 13, 1506. He descended from humble parents and attended flocks of sheep during his boyhood, at which time he practiced the art of drawing from objects in nature. Later he was adopted by a tailor, under whose care he made a collection of paintings and sculptures. Subsequently he removed to Verona, but later secured engagements at Mantua, Rome, Venice, and Florence. His masterpieces include "Triumphs of Caesar," "Triumphs of Scipio," "Defeat of the Vices," and "Parnassus." He takes high rank as a frescoer of altar pieces in churches, and at Rome painted a number of noteworthy frescoes for Pope Innocent VIII. Several poems composed by Mantegna are extant, and he likewise made engravings on copper, some of which are still preserved. His influence on Italian art was marked, since he excelled in perspective, a line regarded of rare merit in his time.

MANTEUFFEL (män'toif-fẹl), **Edwin Hans Karl, Freiherr von,** celebrated general, born in Magdeburg, Germany, Feb. 24, 1809; died in Carlsbad, June 17, 1885. He was trained especially for military activity, joined the army in 1827, and in 1854 was promoted to the rank of colonel. In 1857 he became head of the military bureau at Berlin, a position he held until 1865, when he was made governor of Schleswig. In the War of 1866 with Austria he took a prominent part in the battles of Langensalza, Verbach, Taubenbischofsheim, Helmstadt, and Rossbrunn, defeating the Hanoverians and Bavarians. He was commander of the first corps in the war against France in 1870, but was soon promoted to the command of the first army, when he won battles at Amiens and other important places. In 1871 he secured complete command of the army of the south, with which he made an attack on the French at Belfort and drove 80,000 men before him into Switzerland. After the peace treaty with France, Manteuffel became commander of the army of occupation at Paris. He was promoted to the rank of field marshal in 1873, and in 1879 became viceroy of the new province of Alsace-Lorraine. His fidelity and ability in war made him one of the most efficient generals of the last century. To his superior tactics and strategy are due largely the success attending the military development and power of modern Germany.

MANTIS (măn'tĭs), a genus of locusts remarkable for their form. They are widely distributed in Europe and Asia. These insects include several species, most of which are noted for the large spinous fore legs, which appear as if folded for prayer when waiting for the insects on which they prey. They resemble in appearance and color the plants and trees they frequent, by which they are able to elude observation. They feed on other insects. The different species are found most generally in tropical regions, where they attain to a length of two and a half inches, and their pugnacious habits cause them to be kept by Chinese in cages to fight against each other. A few species are found in the warmer parts of the United States and several have been introduced by accident.

MANTUA (măn'tū-ȧ), a city of northern Italy, on the Mincio River, 25 miles southwest of Verona. It was formerly a city of Lombardy, forming the capital of the duchy of Mantua. The city is strongly fortified, is connected with several railway lines, and has a considerable trade in merchandise. The streets are regularly platted and well graded. They are paved with stone and asphalt. Among the noteworthy buildings are the Cathedral of San Petro, the Church of Saint Andrea, the public library, and the Plazzo Vecchio, in which Napoleon held his court. It has manufactures of various kinds and considerable business, most of which is under the influence of Jews. The city dates from the Etruscans, having been founded earlier than Rome, and during the long period since has been a point of contention by the Romans, Ostrogoths, Lombards, Germans, French, and Italians. Pietole, a suburb, is thought to be the birthplace of Virgil. Population, 1922, 29,344.

MANUAL TRAINING, a branch of education, the department of a system of schools designed to train the hand in the use of tools and in practical grafting. The tools used in conducting instruction along this line include those necessary in forging, carpentering, carving, and general building. These apply chiefly to the educational work of boys, while the girls are trained in cooking, sewing, and various lines of doing fancy work. Manual training is favored by its advocates as a means of fitting youth for the practical duties of life, in addition to training them in the fundamental principles of a general education. It has been favored particularly in the larger cities, where fewer opportunities are offered to learn the arts and duties of the business world and the household than in the smaller towns and rural districts. Kindergarten work and laboratory practice in the sciences are not classed as manual training, since they do not teach the trades or cultivate proficiency in household arts.

Manual training may be said to have had its beginning in Finland as early as 1858, when Uno Cygnaeus formulated a plan to teach it as a branch of study in the primary schools of that country. Eight years later the law made it obligatory for all male teachers to take training in the art of teaching manual occupations, and the boys in all the elementary schools were required to pursue some branch of study in this line. In 1872 the government of Sweden, in order to counteract the decline of the home industries, established what is known as the *sloyd system,* which is named from the Swedish word *slojd,* meaning skill or dexterity. Two years later the Sloyd Seminarium was established at Naas, where an active and stimulating interest in manual training was rapidly developed. Other countries of Europe, including France, Germany, and England, promoted by legal enactment instruction along this line, and at present sloyd is taught in the schools of all the leading cities of Europe.

The first institution of this kind in North America was established in Massachusetts, known as the Sloyd School of Boston, which was organized in 1877. Similar institutions were founded in Chicago, Saint Louis, New York, Omaha, Cleveland, Toronto, Montreal, and other cities of America, and at present most of the cities that have a population of 8,000 promote manual training as an established department in the schools. In 1903 the movement received a marked impetus by the National Educational Association, which planned a movement to introduce this branch as well as instruction in elementary agriculture in the village and rural schools. Two years later a committee of the same association recommended the establishment of secondary schools in rural communities and suggested that training in manual arts, domestic economy, and the elements of agriculture should be made leading features of such schools. It was found that many of the teachers were unable to teach efficiently along these lines, hence practically all of the private and public normal schools have adopted courses designed to stimulate interest and cultivate efficiency along the line of manual training.

In the beginning the advocates of manual training were not numerous, and educators held to the view that the general courses were best fitted for the average youth, while the arts and industries may be learned in the homes or business establishments at the time or after school attendance. However, the concentration of population in the cities, the rise of the factory system, and the division of labor have caused a marked change in the requirement of educational systems. The theory that youth should become fitted to earn a livelihood through the training in the public schools is now deeply seated in the minds of all educators, hence manual training as a distinct branch or department in the system of schools is well rooted. The education now held to be worth while is that which develops all the faculties of the mind and body, which fits youth to the needs of the home, the industries, and the state. The direct object is not to produce an article of merit, but rather to develop power in the pupil to produce and at the same time acquire habits of industry.

MANURE (mȧ-nūr′), any substance that may be utilized for accelerating vegetation or increasing the production of plants. The constituents of the soil necessary to plant growth are exhausted by continuous cultivation of plants, and it becomes necessary to replace them by the addition of manure. The soil absorbs air food naturally to some extent. Besides, there is a decomposition of some waste material, such as stubble, roots, and foliage left on the land, and more or less decomposition of mineral matters. However, this is not sufficient to maintain fertility for long periods. Besides, various plants require different kinds of substances to mature, for which reason it is beneficial to change the classes of plants cultivated from time to time, such as alternating corn, wheat, oats, grasses, and different crops. Experience has demonstrated that the best of soil even under a rotation of crops will not bear abundantly without limit, the yield gradually decreasing. For these reasons it becomes necessary to employ manure fertilizing to maintain the virgin fertility.

The substances used most commonly for fertilizing include the stable manures, such as are formed of the excrements of animals, as the dung of cattle, horses, swine, sheep, and poultry. Commercial fertilizing consists largely of guano, seaweed, refuse of fish, sewage of cities, and artificial saline mixtures, such as ammoniacal salts, phosphoric acid, and phosphates. Dust made from the bones of animals is utilized to a considerable extent, particularly in floriculture and horticulture. The stable manures are spread over the surface of the cultivated lands and are plowed under, while the phosphates, bone dust, and other powdered fertilizers are usually drilled in with the seed. In the Mississippi valley it is possible to maintain fertility by rotation of crops in connection with rearing stock and utilizing all the manures forming naturally. This is true of many sections of Canada and the United States, but in regions having a thinner soil it is quite necessary to use commercial fertilizing, else the cultivation of the land ceases to be profitable.

MANUSCRIPT (măn'ŭ-skrĭpt), a book or paper written by hand or on a typewriter, as distinguished from one that is printed. The term is applied to all classes of writing, whether on paper, parchment, or any other substances. Before printing was invented, the manuscripts were generally written on papyrus, parchments, leather, or vellum, and were formed into a roll or made into a book, when they were called respectively *volumen* and *codex*. The oldest manuscripts extant are now preserved in Paris, and were taken from tombs built by the eleventh dynasty of Egypt. They are written on papyri and are computed to be nearly 4,000 years old. Manuscripts of later dates are very numerous, including writings in the Egyptian, Babylonian, Jewish, and Grecian, besides many others. The science of *paleography* includes the decipherment and proper use of these manuscripts.

The manuscript writings are the forms in which the knowledge of the ancients was preserved. They comprised the only class of writings of which the great libraries of the ancients were constituted. The art of illuminating manuscripts with miniature and ornaments dates from remote antiquity. Vignettes or miniatures are attached to chapters of the Egyptian papyri that date from the eighteenth dynasty, and are painted in primary colors or designed in black outline. The Greek and Roman manuscripts were largely plain, but those dating from the 4th century A. D. are ornamented in art of the Byzantine style, and some of them bear portraits ornamented in the vignette style. The practice of making large capital letters at the beginning of chapters originated with the ancients, and was carried through the centuries even long after the invention of printing. In the larger museums of London, Paris, Rome, Berlin, and Vienna are specimens of manuscripts of different centuries, the collections including various styles of material and designs in finish.

MAN WITHOUT A COUNTRY, The, a story written by Edward Everett Hale, in 1863, and published in the *Atlantic Monthly*. It relates the case of Philip Nolan, an officer who was involved in the treason of Aaron Burr. Having publicly cursed the United States, he was sentenced never to hear the name of his country and was transferred from one ship to another in the foreign service, hence he never saw his own land again.

MANYTCH, or **Manych,** a river of Europe, in the southeastern part of Russia. It rises in a chain of lakes between Astrakhan and Caucasia, near the Caspian Sea, and flows toward the northwest, joining the Don near Tcherkask, a short distance before it discharges into the Sea of Azov. Its upper course is on the line that divides Asia from Europe.

MANZANILLO (män-sȧ-nēl'yō̇), a seaport city of Cuba, in the province of Santiago de Cuba, on the Gulf of Guacanabo. The site is low and surrounded by mangrove swamps. Its harbor is spacious and it has a large trade in tobacco, sugar, and lumber. The streets are wide and cross each other at right angles. It has a number of hospitals and schools. Population, 1906, 44,984; in 1921, 60,703.

MANZONI (män-zō'nē̇), **Alessandro,** novelist, born in Milan, Italy, March 8, 1785; died there May 22, 1873. He descended from noble parents, received a liberal education, and early developed an inclination for literature. In 1806 he published a noted essay on poetry and four years later completed an edition of "Sacred Lyrics" that met with much favor. His novels are largely of a historical character and attracted attention in France and Germany. Goethe was a studious critic of his works, many of which were translated into the German. French, and other languages. In 1823 he published an ode to Napoleon, which contains noble thoughts in splendid diction and embodies an account of the achievements of that great leader. The closing years of Manzoni's life were spent in devout seclusion, though he continued to write until a few years before his death. Among his works are "The Betrothed Lovers" and "History of the French Revolution."

MAORIS (mä'ō̇-rēz), a branch of the Polynesian race, embracing the natives of New Zealand. They are large in stature and fond of bodily exercise, and resemble the Caucasians rather than the Mongolians. Formerly they were savage and cannibalistic, but have become advanced in civilized arts and intermarriages with Europeans are quite frequent. They reside chiefly in the western part of the North Island. Within late years they have steadily increased in numbers.

MAP, a representation, usually a plane projection, of the whole or a part of the earth's surface. The surface of the earth being curved in every direction, it is impossible to represent correctly outlines, distances, directions, and proportions of its features, except upon surfaces similarly curved. For this reason it is possible to indicate the location of features of the earth's surface with much better effect upon a globe. But as globes are too bulky to be moved about conveniently and too small to admit of the representation of minute details, it is found much more convenient to make representations of the earth upon plane surfaces, like the pages of a book. That a map on this plan cannot be made accurate may be proven by endeavoring to spread a plane projection upon a globe, which cannot be done without wrinkles, nor can the paper covering of a globe be laid flat without stretching or tearing. However, it is possible to color maps so as to show depressions and projections in the surface, and to represent by curved lines the different degrees of longitude and latitude. Besides, it is quite satisfactory to represent by color and lines the mountains, countries, lakes, rivers, oceans, cities, thermal relations, amount of rainfall, languages spoken, productions, and various other matters.

The different classes of maps include political, meteorological, relief, hydrographical, geological, contour, historical, ethnological, and statistical. In geographical projections latitude is designated by number north and south from the Equator, and longitude is indicated east or west of a standard meridian. The conventional meridian in the United States is fixed at Washington; in England, at Greenwich; in France, at Paris; in Germany, at Berlin, and similarly in other countries. Nearly all the larger maps published in the United States give the distance east or west from both Washington and Greenwich. All standard maps are made on a given scale of miles to the inch, the scale being published on the map, thus enabling the student to make comparisons and estimate approximate distances by means of the scale.

As far as known, it is believed that the Egyptians were the first makers of maps, the earliest dating from Sesostris, about 1618 B. C., who represented his conquests on tablets that the people might study the advantages gained by military activities. The Grecian Anaximander prepared a map of the whole world as known in 560 B. C., while Ptolemy made a stereographic projection about 150 A. D. Gerhard Mercator (q. v.) is the best known of modern map makers, and in the latter part of the 16th century prepared his projection that represents the earth on a map in which all the parallels and meridians are straight lines. This plan has been elaborated and is still used extensively in most of the modern school books. Maps of practical accuracy were not made until the latter part of the last century, since actual surveys of the earth's surface are necessary to reach a state of high perfection. Many of the maps now published of some of the grand divisions are quite deficient topographically. See **Chart.**

MAPLE, a genus of trees which belong to the genus *Aceraceae,* containing about eighty species, all of which are confined to the North Temperate Zone. About ten of the species are native to North America, but others have been introduced from Europe for ornament or for shade. The principal species of maple found in the United States are hard, bird's-eye, white, red, black, striped, California, mountain, and soft maple. Of these the *hard maple* is the principle source of maple sugar. It is a hardy tree of slow growth, attains a height of from 25 to 100 feet, and yields from 15 to 30 gallons of sap annually, which is obtained by boring a hole in the wood of the tree in the spring about a foot above the roots, and inserting a spout to convey the juice into a vessel placed below for its reception. On boiling down the liquid, about three or four pounds of dark colored crystalline sugar are obtained. A sap quite similar, but less sweet, is obtained from the *soft maple.*

HARD MAPLE.
1, Flower; 2 Seed.

The *bird's-eye maple* is the most valuable for cabinet work, while the soft maple is planted extensively as a rapid-growing ornamental shade tree. The *mountain maple* is a tall shrub with terminal clusters of green flowers, and is a favorite in some localities as an ornamental tree. The two principal species of Europe are the *sycamore* and the *field maple,* the latter being valuable for its wood in manufacturing furniture, musical instruments, and household utensils. The *Japan*, the *Norway*, and the *Tartarian* maples are other foreign species of much value. The soft maple and many other species bear large quantities of seeds that usually develop in pairs, each having a fleshy seed formation at one end and a fan-shaped extension, the whole being two and a half inches long. Hard maple trees bear a similar seed, but it is somewhat smaller. They are particularly numerous in New England and in the Mississippi basin, where vast quantities of maple sugar are manufactured. The flowers of nearly all species are of much value in supplying food for bees.

MARABOU (măr-ȧ-bōō'), the name of a large stork, allied to the adjutant bird and native to the western part of Africa. It has a large bill and a peculiar pouch on the neck, the latter being an air sac and not a crop as is sometimes supposed. The feathers are long and ornamental and command a good price as ornamentations for the hats of ladies. Being a good scavenger, this animal is sometimes domesticated for its habit of clearing away various kinds of refuse matter.

MARACAYBO (mä-rȧ-kī'bȯ), or **Maracaibo,** a gulf, lake, and city of Venezuela. The gulf is an extension from the Caribbean Sea, connecting it with Maracaybo Lake, a body of water 100 miles long, and from 35 to 65 miles wide. The gulf narrows down to a neck 34 miles long and 10 miles wide, but the largest class of vessels cannot enter on account of the sand bars shifting continuously. In 1499 the gulf and lake were discovered by Rodrigo de Bastidas. These waters contain many species of valuable fish. Their banks are low, the water is fresh, and the surface is not affected by tides. The city of Maracaybo is situated on the western shore of the strait, about 21 miles from the sea. It has fortifications and various manufactures and is a central export city for coffee, cocoa, cotton, hides, and tropical fruits. Manso Pacheco founded the city in 1571. Population, 1922, 48,637.

MARAJÓ (mä-rȧ-zhō'), or **Joannes Island,** a body of land situated between the estuaries of the Pará and Amazon rivers. It belongs to the province of Pará, Brazil, and has an area of 17,850 square miles. The surface is low and level, with extensive swamps in the northern part, and the southwestern part has fine forests of rubber and other trees. Most of the inhabitants engage in hunting, rubber gathering, and stock raising. Sauré, on the eastern coast, is the principal settlement. Population, 1922, 20,178.

MARANHÃO (mä-rȧn-youn'), or **São Luiz,** a city of Brazil, on the island of Maranhão, capital of a state of the same name. It is located opposite the mouth of the Itapicurú River, 275 miles southeast of Pará. The surrounding country is somewhat hilly and the climate is warm, but it is healthful and has a good trade. The chief buildings include a cathedral, a hospital, and several schools. The city was founded by the French in 1612. Population, 1922, 39,506.

MARAT (mȧ-rä'), **Jean Paul,** eminent revolutionist, born at Boudry, near Neuchâtel, Switzerland, May 24, 1744; slain July 13, 1793. He secured a liberal education, took a course in medicine at Paris, and previous to the revolution spent a number of years in foreign travels, visiting Amsterdam, Edinburgh, Dublin, Hamburg, London, and other cities. While at London he prepared several treatises on scientific subjects and medicine, and supported himself largely by these and by public lectures. He became court doctor in France in 1777 and the following year published a treatise on light, heat, and electricity, which attracted the favorable attention of Benjamin Franklin and Goethe, but it was adversely criticised by Newton. In 1788 he founded his famous *Publiciste Parisien* for the purpose of supporting the revolution, and later changed its name to *Journal de la République Française.* This journal became the organ of the societies favoring the revolution and in it the king and his supporters were denounced vigorously.

The better class of French people began to look upon Marat as a demagogue, but the radical party rallied to his support, thus making him both powerful and dangerous. To avoid destruction, his printing presses had to be concealed from the authorities, and he himself escaped safely several times by fleeing to England or hiding in secluded places of Paris. After the republic was established, he was chosen to positions of honor, but was opposed by many of the leading republicans. On May 31, 1793, he issued an address as president of the Jacobin Club, in which he called on the people to slay all traitors and to demand their rights in government by insurrectionary movements. He pointed out that at least 270,000 persons ought to be executed to obtain proper government in France, and gave warning that he would demand the execution of more unless his request received favorable attention. The revolutionary tribunal placed him on trial for inciting disorders, but he was acquitted after some delay. On July 13 Charlotte Corday assassinated him because her lover had been slain by a mob, but was herself guillotined. The remains of Marat were placed in the Pantheon on Nov. 4, 1793, but four days later were removed, and his picture was taken from its place in the convention, where he was universally detested.

MARATHON (măr'ȧ-thŏn), an ancient village of Greece, about twenty miles northeast of Athens, the site of which is now occupied by Vrana. It is noted in history for the celebrated battle fought there on Sept. 28, 490 B. C., which Creasy considers one of the decisive military engagements of the world. The Persians were led by Darius, numbering 110,000 men, while the Greeks under Miltiades had an army of only

10,000. The latter were reënforced by 1,000 Plataeans with heavy arms, which inspired Miltiades to attack the Persians with great vigor. He succeeded in defeating the enemy with a loss of 6,400, while the Greeks lost only 195. The result of this battle preserved the independence of Greece, but, if the Athenians had been defeated, Persia would have made all of Greece tributary.

MARATTI (mȧ-rät′tē), **Carlo,** painter, born in Camerino, Italy, in May, 1625; died Dec. 15, 1713. He studied under Andrea Sacchi, produced many noted works of art, and was employed by a number of popes from Alexander VII. to Clement IX. Clement XI. created him a knight of the Order of Christ and Louis XIV. selected him as his court painter. His works include a restoration of the Raphael frescoes in the Vatican, several Madonnas, and "The Baptism of Jesus Christ."

MARBLE, a small ball of marble or some other hard substance, used by children as a plaything. Various games have been played with marbles from an early date in the history of mankind, and for some unaccountable reason these pastimes are played instinctively for several weeks early in the spring. In some countries and at early ages children count marbles with their toys, and those belonging to this class are usually of larger size that the kind ordinarily employed in playing games. The most extensive marble manufactory is at Coburg, Germany, where they are made in large quantities of limestone. In some localities they are made of marble, glass, and clay. The so-called striped and the bull's-eye marbles are molded in clay, and, when partly dried, are baked and glazed. The games played with marbles are very numerous.

MARBLE, a name applied to any limestone that is sufficiently hard to take a fine polish. The species which are of value for building or ornament are composed mainly of calcium carbonate or of calcium and magnesium carbonate. The colors of marble range from pure white through all shades of gray to black, while violet, red, drab, yellow, pink, and green are likewise abundant. Gray and black colors are due to carbonaceous matter, and the others mainly to iron oxide. Excellent marbles are secured from some of the fossiliferous limestones, such as are taken from the carboniferous formations, and these are colored various shades of gray. Good marbles are also secured from non-fossiliferous crystalline formations, these consisting mainly of sedimentary calcareous strata, which are altered by metamorphism. The purest classes of marble are used for statues and monuments, while others are of value for building material.

A fine grade of marble of various colors is obtained from the Grand Cañon of the Colorado, but there are quarries of more or less value in many portions of Canada and the United States. The marble used by ancient artists in sculpturing came largely from the Parian and Carrara quarries, located respectively in the island of Paros and in Italy, which still produce species of very excellent quality. Both the *Carrara* and the *Parian* marbles are white. The *Numidian marble* of Africa is either white or yellow, but usually white with yellowish markings. Extensive marble quarries are worked at Glens Falls, N. Y., in Vermont, in Georgia, and in Ontario.

MARBLE, Manton, journalist, born in Worcester, Mass., Nov. 16, 1835. He studied at Rochester University, where he graduated in 1855, and began newspaper work on the Boston *Journal.* In 1858 he removed to New York City, where he became a member of the staff of the *Evening Post,* and two years later joined others in founding the *World.* He was proprietor and editor of the *World* from 1862 until 1867, in which he advocated tariff revision and the policies of the Democratic party. In 1885 he was a delegate to the Bimetallic Congress in Europe. In 1878 he published "A Secret Chapter of Political History," in which he set forth the claim that Tilden was rightly elected to the Presidency. He died July 24, 1917.

MARBLEHEAD, a town of Essex County, Massachusetts, on a peninsula in Massachusetts Bay, eighteen miles northeast of Boston. It is on the Boston and Maine Railroad, has a commodious harbor, and is a popular summer resort. The chief buildings include the public library, the Abbott Hall, an art gallery, and many schools and churches. Fountain and Fort Sewall parks are fine public resorts. It has manufactures of boots and shoes, clothing, machinery, canned fish, and boats. It was settled in 1629 and furnished 1,440 men for the Revolution. Population, 1905, 7,209; in 1925, 8,214.

MARBURY DECISION, a decision of the Supreme Court of the United States, growing out of a case brought by William Marbury against President Madison. Marbury had been appointed justice of the peace in the District of Columbia by President Adams, which appointment was confirmed by the Senate, but President Jefferson had failed to receive the commission of appointment, hence Marbury moved the Supreme Court to issue a mandamus to James Madison, commanding him to deliver the commission. The decision is to the effect that Marbury was entitled to his commission, but that the Constitution did not invest it with the authority to issue a mandamus in such a case. It was stated by Chief Justice Marshall, by whom the opinion was delivered, that the Constitution is supreme to any statute. The decision is important for the reason that it is the first one in which the court set aside an act of Congress because of being in conflict with the Constitution.

MARCELLUS (mär-cĕl′lŭs), **Marcus Claudius,** Roman general, noted as the conqueror of Syracuse, born about 268 B. C.; killed in 208.

He descended from a plebeian family. In 222 he became consul and proceeded to Gaul, where he defeated the Insubrians, slaying their king in the contest. Subsequently he marched against Hannibal, and was the first Roman to successfully oppose that warrior in the Second Punic War. In his second consulship he led an expedition against Syracuse, which he conquered in 212 B. C., and soon after established Roman supremacy in all parts of Sicily. In 208 B. C., while serving for the fifth time as consul, he marched against the Carthaginian forces under Hannibal, but was slain in an ambuscade before attaining material results.

MARCH, the third month of the year, so named from Mars. It was the first month in the year of ancient Rome and continued as such until the adoption of the Gregorian calendar. It has 31 days. See **Month.**

MARCH, Francis Andrew, philologist, born at Millbury, Mass., Oct, 25, 1825; died in 1911. He studied at Amherst College, where he served as instructor for two years, and in 1850 was admitted to the New York bar. He became professor of comparative philology at Lafayette College, Easton, Pa., in 1858, and made a special study of the Anglo-Saxon language. The American Philological Association selected him as president in 1873, and subsequently he served on several important committees for the purpose of revising English spelling. In 1879 he directed the work in America for the "Historical Dictionary of the English Language."

MARCH, Peyton Conway, army officer, born at Easton, Penn., Dec. 27, 1864. He was trained at the United States Military Academy and saw service in the Spanish-American War, chiefly in the Philippines. Subsequently he was commander of army artillery and in 1917 was promoted to the rank of general and made chief of staff in Washington, having charge of all the fighting forces within the country during the war.

MARCHAND (mär-shän'), **Jean Baptiste,** soldier, born in Thoissey, France, Nov. 22, 1863. He joined the army in 1883, but attended the military school of Saint Maixent most of the time until 1887. Two years later he went to West Africa for the purpose of aiding in exploring the Niger, and subsequently filled several important missions in relation to the extension of French influence in Africa. In 1895 he conceived the plan of organizing an expedition to proceed from the coast of French Congo to the Upper Nile, and two years later received command of an expedition to attempt that enterprise. Accordingly, he ascended the Congo and the Ubangi rivers, established Fort Desaix near the confluence of the Suah and Uau rivers, and in 1898 occupied Fashoda. An international question was raised on account of the occupation of Fashoda, but France soon after abandoned the claim to England, and Marchand proceeded to Abyssinia, reaching there on March 11, 1899. The exploits during the expedition gave much valuable information regarding the interior of Africa, and enabled France to outline more definitely its sphere of influence. Subsequently he held several important commands in the army. He died May 16, 1917.

GUGLIELMO MARCONI.

MARCONI (mär-kō'nē), **Guglielmo,** engineer and inventor, born near Bologna, Italy, April 25, 1875. He studied under Professor Rosa at Leghorn and subsequently at the University of Bologna. While at the latter institution he began to develop material results in wireless telegraphy, and later settled on his father's estate at Bologna to carry on practical tests in the application of electricity. In 1896 he conducted successful experiments in wireless telegraphy between Pernath and Weston, England, and subsequently sent messages from Rome to a vessel about nine miles from the shore, but later perfected his instrument to induce and receive messages a distance of several hundred miles. In 1897 he established an experiment station on the Isle of Wight, and there completed apparatus by which messages were sent and received at long distances. Marconi is among the earliest inventors who produced appliances to successfully communicate at long distances by wireless telegraphy.

MARCO POLO. See **Polo.**

MARCY (mär'sĭ), **William Learned,** statesman, born in Southbridge, Mass., Dec. 12, 1786; died at Ballston Spa, N. Y., July 4, 1857. He studied in the public schools and in 1808 graduated at Brown University. Subsequently he studied law in Troy, where he was admitted to the bar. He served with distinction in the War of 1812, was elected as a Democrat to be judge of the State supreme court in 1829, and was United States Senator from 1831 until 1832. While in the Senate he originated the well-known statement, "To the victors belong the spoils." He resigned his seat in Congress to serve as Governor of New York from 1833 until 1839, was Secretary of War under Polk from 1845 to 1849, and filled the office of Secretary of State under Pierce from 1853 until 1857. His service in the portfolio of State became distinguished by a controversy with Austria on the right of expatriation, and by reason of his ability as a diplomat and statesman.

MARDI GRAS (mär'dē grä'), a term meaning Fat Tuesday, applied to a carnival celebrated annually on the day before Ash Wednesday in New Orleans and other southern cities of the United States. The festival occurs at the same time as Shrove Tuesday, a day celebrated in

England. Festivals of revelry and merrymaking were observed at that time of the week in many European cities for several centuries. The practice was first introduced in America by the creoles, in 1827, and since then has been a delightful and popular pastime among the people of many communities.

MARE ISLAND, a small island of California, in Solano County, near San Francisco. It is located in the northeastern part of San Pablo Bay, opposite the city of Vallejo, and is the Pacific station of the United States navy. An observatory, a lighthouse, a naval arsenal, and a sectional floating dock are among the important structures.

MARENGO (mȧ-rĕn̲′gō̇), a village near Bormida, northern Italy, in the province of Alessandria, noted for a decisive battle on June 14, 1800. The Austrian army of 32,000 was led by General Melas and the French forces of 23,000 by Napoleon, but the latter were victorious, the Austrians losing about 9,000 in prisoners and killed and the French losing 7,000. An armistice followed, by the terms of which the Austrians gave up all their fortified places in Italy west of the Mincio River.

MARGARET (mär′gȧ-rĕt), **Saint,** Queen of Scotland, daughter of Edward the Atheling, born in Hungary in 1046; died in Edinburgh, Scotland, Nov. 17, 1093. In the spring of 1069 she married Malcolm Canmore, King of Scotland. Her influence did much to extend civilization and Christianity, and, besides founding a church in Dunfremline, she disseminated Christian practices and made that faith strong with the common people. Pope Innocent IV. made her a saint in 1250. She was the mother of nine children, her youngest son being David I.

MARGARET, Queen of Denmark, Norway and Sweden, born in Copenhagen, Denmark, in 1353; died Oct. 28, 1412. She was the second daughter of Waldemar III. of Denmark, became the wife of Hakon III., King of Norway, and at the death of her father, in 1375, became regent of Denmark for her son Olaf, who died in 1387. At the death of her husband, in 1380, Margaret had become Queen of Norway, and at the death of her son she was made the sovereign ruler of Denmark. The success of her government endeared her to the people, but she convened a landthing, or congress, and with the consent of her constituents named her grandnephew, Eric of Pomerania, as successor, though she remained as regent during his infancy, and even afterward had full control on account of his incapacity. About the same time overtures were made to her by the dissatisfied subjects of Albert, King of Sweden, but that sovereign resisted a union. Accordingly, an army of invasion entered Sweden, took Albert and his principal supporters prisoners, and in 1397 united the kingdoms by a bond of perpetual union and peace, under the famous *Calmar Compact.* Subsequently the dominion was extended over Finland and Lapland, and the long desired object of uniting all Scandinavian people under one compact government was reached. Margaret died after a successful reign of 37 years, but soon after the work of unison effected by her was destroyed by internal discord. Margaret became known in song and oratory as the "Northern Semiramis."

MARGARET OF ANJOU, Queen of England, wife of Henry VI., born in Lorraine, France, March 23, 1429; died Aug. 25, 1481 She was the daughter of René of Anjou, the titular King of Sicily, and of Isabella of Lorraine, and married Henry VI. of England in 1445. The weak character of the king made it necessary for her to act in directing many of the affairs of state, out of which grew jealousy on the part of the English people against France. The strife between the two nations resulted in England losing all its possessions acquired in France, except Calais, on account of which the Duke of York, who claimed the English throne, and his followers plunged the country into a long civil contest, known as the Wars of the Roses. The struggle ended in 1471 and Margaret was kept a prisoner in the Tower for five years, when she was ransomed by Louis XVI. for 50,000 crowns. Her husband died or was murdered in the Tower, while her son was cruelly deprived of his life by his royal victor.

MARGARET OF NAVARRE, Queen of Navarre, sister of Francis I. of France, born in Angoulême, France, April 11, 1492; died Dec. 21, 1549. Her training was administered with much care at the court of Louis XII., and her intellectual strength and personal charms made her extremely popular. In 1509 she married the Duke of Alençon, who died in 1525, and two years later she became the wife of Henry of Navarre. Her influence was cast in favor of developing industrial arts, learning, and commercial enterprises, a task for which her culture and wisdom gave her particular fitness. She published "Marguerites de la Marguerite des Princesses," a collection of tales called "Heptameron," and several volumes of poems. Her only child was Jeanne d'Albert, who became the mother of the French king, Henry IV. The latter was the founder of the royalty of the house of Bourbon.

MARGARITA (mär-gȧ-rē′tȧ), an island off the coast of Venezuela, in the Caribbean Sea, belonging to the state of Nueva Esparta, Venezuela. It is 45 miles long and from four to twenty miles wide, and has an area of 450 square miles. The surface is mountainous, but it has a considerable proportion of fertile land. Agriculture, stock raising, and fishing, are the chief industries. Salt, coffee, sugar, cotton, and pearl are exported. Columbus discovered the island in 1498. Population, 1922, 39,875.

MARIA CHRISTINA (mȧ-rē′ȧ krĭs-tē′nȧ), Queen of Spain, daughter of Francis I., King of the two Sicilies, born in Naples, Italy, April

27, 1806; died at Le Havre, France, Aug. 22, 1878. She became the fourth wife of Ferdinand VII. of Spain in 1829, and at his death, in 1833, was made regent for her daughter, Isabella. Her claims and those of her daughter were supported by the Spanish liberals, but Don Carlos led a rebellion in the hope of securing the throne, and in 1836 she was forced by a conspiracy to grant a constitution to Spain. Four years later she was compelled to flee to France for safety, but returned in 1843, though the revolutionary party exiled her in 1854. In 1864 she again returned to Spain, but disturbances arising on account of her presence caused her to be exiled permanently in 1868. Early in the regency period she formed a marriage contract with Fernando Muñoz (died Sept. 12, 1873), a member of the royal bodyguard, and by him had ten children. The period of regency was disturbed principally because of the Carlists, yet she showed little interest in the common weal, her main ambition being to retain her own power.

MARIA LOUISA, Empress of France, born in Austria, Dec. 12, 1791; died Dec. 18, 1847. She was a daughter of Francis I. of Austria and in 1810 married Napoleon I., after he had divorced the Empress Josephine. She was regent of France in 1812 and 1813 and was not permitted to accompany her husband when he abdicated and went to Elba. After the final overthrow of Napoleon, she received the duchies of Piacenza, Parma, and Guastalla, over which she ruled until her death. She was the mother of a son by Napoleon, born March 20, 1811, who was called King of Rome. In 1821 she married Count von Neipperg, whose death occurred in 1829.

MARIA THERESA.

MARIA THERESA (mȧ-rī′ȧ tĕ-rē′sȧ), Empress of Germany and Austria and Queen of Hungary and Bohemia, born in Vienna, Austria, May 13, 1717; died Nov. 29, 1780. She was the daughter of Charles VI. and in 1736 married Francis Stephen, Grand Duke of Tuscany, who shared with her in the government after her accession to the throne. The powers of Europe agreeing to the pragmatic sanction, the right of succession to the throne was extended to females of the royal line. At the death of her father, on Oct. 21, 1740, she ascended the throne, but contestants at once put forth conflicting claims. The finances of the government having been reduced by war, the people became discontented, and a number of the German princes claimed large portions of her dominion. Soon after Frederick the Great led his armies into Sicily, the Bavarians invaded Bohemia, Naples and Spain put forth claims to the Austrian territory of Italy, and the young queen fled for safety to Pressburg, where she threw herself upon the sympathy and patriotism of her Hungarian subjects. The Hungarians responded to her appeal with alacrity and expelled the Bavarians and French. This was the beginning of the Seven Years' War for the title to the Austrian throne. Several of the contestants quarreled among themselves, and when the treaty of Aix-la-Chapelle, in 1748, terminated the war, she lost only Glatz, Silesia, Piacenza, Parma, and Guastalla, but gained the advantage of having her husband elected emperor.

With a desire to regain Silesia, she adopted a policy that brought on the Seven Years' War with Frederick the Great of Prussia, during which her claims to that territory were lessened greatly and the country once more became exhausted financially. Upon the cessation of hostilities, she again put forth remarkable ability in bettering internal conditions, founded schools and universities, reformed the criminal practice and improved the condition of the peasants.

In 1764 her son Joseph became King of the Romans and at the death of her husband, in 1765, she gave a part of the official duties of her own dominion over to him. In 1772, when Prussia and Russia entered upon the partition of Poland, she joined them and received as her share Lodomeria and Galicia. In 1777 she compelled Turkey to cede Bukowina, and in 1779 acquired Innthal by the Treaty of Teschen. Though a devout Catholic, she enforced various religious reforms, among them those suppressing the Inquisition at Milan and certain practices of the Jesuits, and forbade entering monasteries before the age of 25 years. Three sons and six daughters survived her, among them Marie Antoinette and Joseph II., the latter succeeding her to the throne.

MARIA THERESIOPEL, or Szabadka, a city of Hungary, 108 miles south of Budapest between the Danube and the Theiss. It is a railway center, has noteworthy churches, and lies in a rich corn-growing district. An electric railway extends to the baths at Lake Palics. The people are chiefly Catholic Magyars and Serbs. Population 1922, 98,872.

MARIAZELL (mä-rē̇-ȧ-tsĕl′), a village in Austria, in the grand duchy of Styria. famous on account of an image of the Virgin Mary. The image was presented to the place in 1157. Nearly 500 years afterward, in 1644, it was put into a magnificent church, where it is visited annually by thousands of pilgrims.

MARIE ANTOINETTE (mȧ-rē′ äṇ-twä-nĕt′), **Josèphe Jeanne,** Queen of France, youngest daughter of Francis I. and Maria Theresa of Austria, born in Vienna, Nov. 2, 1755; guillotined in Paris, France, Oct. 16, 1793. In 1770 she was betrothed to the Dauphin of France, afterward Louis XVI., and the marriage took place in May of the same year at Versailles, where she was received with distinction by her husband and his father, Louis XV. The frankness and pleasantry of the young dignitary did not meet with approval by the stiffness and rigidity of French etiquette, and she was accordingly neglected by her husband. It was the policy of Austria to strengthen the Austrian alliance by this marriage. However, many of the French people thought they discovered a dislike for the young queen when she ascended to that position in 1774, and enemies at once circulated reports of intrigues and personal recklessness against her, none of which was ever proven. Her faults were largely in that her coming in contact with the gaiety of Paris at an early age had imbued her with a desire for fine dress, pleasure, and banquets, and had so bent her disposition that she could not appreciate the misery and deplorable condition of the common people of France. She came to be called "The Austrian," and all the wrongs and extravagances of the government officials were charged to her. Her husband was negligent and careless in molding public policy, while she was courageous and persistent, but misunderstood the public will. In 1779 the states-general met, a body to which she showed opposition, and by it she was declared the direct cause of the financial derangements.

In October of the same year Marie Antoinette was given a brilliant reception at a ball in Versailles, on account of which an insurrection of women arose and made an attack on Versailles, but when all others lost heart she appeared in full sight upon the balcony with a display of bravery and self-possession which won her momentary respect. The revolutionists looked upon her as the head of armed opposition to their cause, but her husband could not be induced to take advantage of bringing the military forces to his support, neither did he have the moral strength to bring about reforms by quiet means. Her attitude was that of an extreme royalist, disliking such liberal noblemen as Mirabeau and Lafayette, and when the former died, in 1791, all assurance of maintaining the monarchy became lost. When this became apparent, she advised rapid flight, but her husband could not be induced immediately to seek safety in that way, and, when the members of the royal family finally attempted flight in June, 1791, they were intercepted at Varennes and returned. Not long after the Tuileries was stormed and on August 10, 1792, the legislative assembly announced the deposition of her husband.

The convention condemned the king to be executed, but Marie Antoinette remained by him with a spirit of heroism, enduring the many severe trials like a martyr. In October charges were brought against her, alleging that she had given aid to foreign enemies of France, dissipated the finance, and encouraged domestic strife. She was speedily convicted and sentenced to die. Her son, Louis XVII., died shortly after at the age of eight years. However, her daughter was permitted to leave France and married the Duke of Angoulême.

MARIETTA, county seat of Cobb County, Ga., 20 miles north of Atlanta, on the Louisville and Nashville and other railways. The industries include marble works, machine shops, chair factories, electric works, and local trade. Among the chief buildings are the high school, library, courthouse, and postoffice. Kenesaw Mountain is near the city. It was incorporated in 1845. Population, 1920, 6,190.

MARIETTA (mā-rĭ-ĕt′tȧ), a city in Ohio, county seat of Washington County, at the confluence of the Muskingum and Ohio rivers, 124 miles southeast of Columbus. It is on the Pennsylvania, the Baltimore and Ohio, and other railroads, and is surrounded by a country which produces coal, petroleum, natural gas, and farm products. The noteworthy buildings include the county courthouse, the public library, the high school, and the Marietta College, founded in 1835. Among the manufactures are farming machinery, flour, hardware, cigars, furniture, leather, brick, tile, and oil. It has a large trade, electric street railways, steamboat communication, and systems of pavements and waterworks. Marietta was settled in 1788 by Rufus Putnam and a colony from New England, and became the chief seat of the Northwest Territory, which was organized here the same year. The place was incorporated in 1800. Blennerhasset Island, twelve miles down the river, was associated with the conspiracy of Aaron Burr. Population, 1920, 15,100.

MARIGOLD (măr′ĭ-gōld), the name of various plants of the aster family, having flowers prized for their beauty and deep yellow color. The common species of garden and pot mari-

AFRICAN MARIGOLD. FRENCH MARIGOLD.

golds have sessile leaves with double orange-colored flowers. They are native to Southern Europe and attain a height of from one to two feet. The *bur marigold* is native to North America, where it thrives in wet places, and is allied to the *water marigold,* which is found in the United States and the warmer parts of Canada. The *fig marigold* is native to Africa and the *corn marigold* to Great Britain, but the latter is sometimes classed as a chrysanthemum. Many of the species have been improved by cultivation, are widely naturalized, and are used for flavoring edibles and in coloring butter and cheese. They are raised from the seeds, being transplanted when three or four inches high.

MARINETTE (măr-ĭ-nĕt′), a city in Wisconsin, county seat of Marinette County, on Green Bay, at the mouth of the Menominee River. It is on several surfaced highways and on the Chicago and Northwestern and the Chicago, Milwaukee and Saint Paul railroads, and has communication by electric railways and steamboats on the Great Lakes. The noteworthy buildings include the county courthouse, the public library, the high school, and two hospitals. It has systems of pavements, sewerage, and waterworks. Among the manufactures are lumber products, ironware, paper, machinery, and flour. The place was first settled about 1850 and was incorporated in 1887. Population, 1905, 15,354; in 1920, 13,610.

MARIO (mä′rê-ō), **Giuseppe,** eminent singer, born in Cagliari, Italy, Oct. 18, 1810; died in Rome, Dec. 11, 1883. He was chosen first tenor at the opera at Paris, where he became noted for his marked ability. He married the celebrated singer, Giulia Grisi (q. v.), and was the father of six daughters.

MARION, county seat of Williamson County, Ill., 110 miles southeast of East St. Louis, on the Illinois Central Railway. It has a large trade in farm produce and coal. The features include the courthouse, Y. M. C. A., high school, city hall, and manufactures of flour, cigars, and machinery. It was incorporated in 1870. Population, 1920, 9,582.

MARION (măr′ĭ-ŭn), a city in Indiana, county seat of Grant County, on the Mississinewa River, 65 miles northeast of Indianapolis. It is on the Pennsylvania, the Nickel Plate, the Cleveland, Cincinnati, Chicago and Saint Louis, and other railroads, and has communication by interurban electric lines with many neighboring towns and cities. The surrounding country is fertile and contains deposits of natural gas. Besides other fine buildings, it has a fine courthouse, a public library, a normal school, and a soldiers' home. Among the manufactures are machinery, clothing, glass, bicycles, furniture, boilers, flour, tile, brick, paper, and cigars. The municipal facilities include sewerage, public lighting, waterworks, and pavements. It has a large trade in merchandise and farm produce. Population, 1920, 23,747.

MARION, a city in Ohio, county seat of Marion County, 44 miles north of Columbus, on the Erie, the Pennsylvania, and the Cleveland, Cincinnati, Chicago and Saint Louis railroads. The noteworthy buildings include the county courthouse, the public library, the Y. M. C. A. building, the Sawyer Sanitarium, a normal school, and many churches. In its vicinity are extensive deposits of limestone, which are quarried for building purposes and the manufacture of lime. It has a large trade in merchandise and produce. The industries of the city produce bread, brick, candy, flour, steam machinery, ironware, engines, threshers, and utensils. Population, 1900, 11,862; in 1920, 28,501.

MARION, Francis, Revolutionary general, born in Winyaw, S. C., in 1732; died Feb. 28, 1795. He descended from a Huguenot family, received a common school education and served against the Cherokee Indians from 1759 until 1761. Subsequently he was a member of the provincial congress and at the beginning of the Revolution joined the colonists, serving as lieutenant colonel at Fort Moultrie in 1776 and in the unsuccessful attack on Savannah in 1779. In 1780 he organized the celebrated Marion's Brigade, with which he supported General Gates, and subsequently operated in the vicinity of Pedee River and other parts of the Carolinas. From his camp at Snow's Island he made many surprises upon the British, defeating them in various skirmishes, and became known as the "Swamp Fox." It is said that a British officer who visited his camp found his fare to consist of roasted sweet potatoes, served on a bark of elm, and a drink made by mixing water and vinegar, and that he afterward gave up his commission, declaring his inability to battle against a patriotism so devoted as that of Marion and his men. Marion's Brigade aided in the capture of Fort Watson and Eutaw Springs and took Georgetown. After the war he engaged in farming, but served as a State senator of South Carolina, aiding to devise a State constitution and furthering progressive legislation. He was one of the bravest of American soldiers.

MARIUS (mā′rĭ-ŭs), **Caius,** Roman general, born at Cereatae, Italy, in 157 B. C.; died in 86 B. C. He descended from obscure parents, joined the army under the younger Scipio Africanus, and won distinction at Numantia in 134 B. C. He became a plebeian tribune in 119 B. C., in which office his popularity among the common people became universal on account of opposing the nobles in their attempts to oppress popular rights. Five years later he was made propraetor of Spain, where he dispersed the bands of marauders that had infested the peninsula, and shortly after married Julia, the aunt of Julius Caesar, thus increasing his influence with those in command. Subsequently he took a prominent part in the Jugurthine War of Africa, was made consul at Rome, and a year later became proconsul to end the war against Jugurtha. A jealousy had sprung up between him and Sulla, but it fell to the lot of the latter to end the Jugurthine War in 106 B. C., and the contentions ensuing from this event occasioned a disastrous civil war.

The fortunes of the Civil War compelled Marius to flee from Rome and seek safety in Africa, but movements in his favor brought about his recall in 104 B. C., when he was made consul. Immediately he marched with a vast army against the invading Teuton and Cimbri legions. After a series of battles covering two years, the Teuton forces were defeated in a memorable battle near the site of the present Aix in Provence, France, where fully 150,000 lost their lives. His popularity in Rome on account of his successes was so great that he served six different times as consul, was lauded as the savior of the country, and was mentioned at banquets in connection with the gods. In 88 B. C. Sulla was appointed to command in the war in the East against Mithridates, on account of which the old jealousy again sprang forth between the two warriors, and Marius was compelled to flee for safety to the ruins of Carthage, which he reached by many remarkable escapes after landing in Africa. Cinna now led a movement in his favor at Rome, and Marius returned to join him in capturing the city. This was not a difficult task, as the people were anxious to revenge the wrongs perpetrated upon them by the aristocracy. Marius and Cinna accordingly engaged 4,000 slaves to massacre the principal opponents, which was accomplished in about five days, and the two declared themselves consuls of the Roman possessions. Marius did not long enjoy his newly conquered opportunities, as he died seventeen days after the proclamation.

MARJORAM (mär′jô-ram), a class of plants of the genus *Origanum*. They have nearly entire leaves, dense oblong spikes of flowers, and colored bracts. The two principal species are the *sweet marjoram* and the *pot marjoram*. Both are cultivated for seasoning in cookery. The common marjoram is native to Western Europe and is perennial. It has small acute leaves and reddish flowers, and has been naturalized in Canada and the United States. The blossoms are used as a seasoning and the oil of marjoram, which is also called oil of thyme, is distilled from the various species.

MARK, the monetary unit of the German Empire, equal to 100 *pfennige*. It was adopted as the monetary unit in 1873, immediately following the Franco-German War, and represents .3982 grammes of gold, or $0.23821 in the money of Canada and the United States. The crown is equal to ten marks, and the double crown is valued at twenty marks. The mark is the monetary unit of Finland, where it is divided into 100 *penni*, and is equal to one franc in the money of France.

MARK, Saint, the evangelist whose name is prefixed to the second gospel. He is thought to be the same as mentioned in Acts xii. as the "John whose surname was Mark." His mother was named Mary and lived in Jerusalem, and her house is mentioned as a resort of Christians. His conversion is attributed to Peter, who speaks of him in familiar terms, and he is thought to be the young man who was nearly captured on the evening Christ was betrayed. Mark accompanied Paul and Barnabas on their first mission as far as Perga in Pamphylia, but there left them and returned to Jerusalem. It is thought that Barnabas, his relative, looked upon him as a trustworthy follower, but that Paul thought him fickle, on account of which the two separated, Barnabas taking Mark with him on a mission. Later Paul became a confidant of Mark, attended him during his final imprisonment, and mentions him favorably in II Timothy, but nothing certain is known of the closing years of his life.

The *Gospel of Mark* is assigned to the authorship of Saint Mark. This book is attributed to the year 70 A. D., and it was probably the first of the gospels to be published. It is quite clear that the writer was well acquainted with Judaea and that he designed the gospel that bears his name especially for the Gentiles, since it contains no statements likely to give offense to them. The style is more precise and graphic than that of the other gospels, the miracles are emphasized more than the discourses of Jesus, and the language is rather like that of Saint Matthew than that of Saint Luke. It is thought that the gospel was written either at Rome or Alexandria from the recollection that Peter had of his associations with Jesus, but the last twelve verses are of doubtful authenticity.

MARK ANTONY. See **Antonius, Marcus.**

MARKHAM (märk′am), **Clements Robert,** naval officer and author, born in Stillingfleet, England, July 30, 1830. He studied at Westminster and entered the navy in 1844, but left the service in 1851 to become a clerk of the board of control. In 1868 he was given charge of the geographical department in India, and subsequently accompanied the Arctic expedition in search of Sir John Franklin. Afterward he explored the forests of the Eastern Andes in South America, introduced the cinchona plant into India, and served as geographer in Abyssinia. His publications include "Travels in Peru and India," "War Between Peru and Chile," "Franklin's Footsteps," and "History of Peru." He was editor of the *Geographical Magazine* from 1872 until 1878. He died Jan. 30, 1916.

MARKHAM, Edwin, poet and lecturer, born in Oregon City, Ore., April 23, 1852. He removed to California in 1857, where he was employed on a farm and a cattle ranch. In the meantime he saved his earnings with the view of securing an education, which enabled him to study at the San José Normal School and the Christian College in Santa Rosa, from which he graduated. For some years he was a teacher and principal of the Topkins Observation School at Oakland. His poems were published extensively, but his "The Man With the Hoe," written in 1898, is the best known. He contributed to many periodicals and is well known as a lecturer. Among his writings are "The End of the Century," "Lincoln, the Man of the People," "The Mighty Hundred Years," and "The Chant of the Vultures."

MARL, a deposit of earthy matter, consisting principally of calcium carbonate, sand, and clay in various proportions. The more prominent ingredients characterize its appearance and consistency, the carbonate of lime usually varying from five to twenty per cent. It is used as a fertilizer, its utility for this purpose depending largely upon the presence of calcareous and argillaceous substances. In England, France, Germany, and other European countries marl has been used for fertilizing for many centuries, though in some countries slacked lime is employed as a substitute for the mineral marl.

MARLBORO (märl'bŭr-ȯ), a city of Massachusetts, in Middlesex County, 26 miles west of Boston, on the Boston and Maine and the New York, New Haven and Hartford railroads. The chief buildings include the public library, the city hall, the high school, the G. A. R. building, and the Saint Anne's Convent. Among the manufactures are candies, boots and shoes, ironware, machinery, hosiery, cigars, and fabrics. It has electric street railways, brick and macadam pavements, and a large trade in merchandise. The surrounding country is agricultural and dairying and near the city is Williams Lake, a sheet of water covering about 160 acres. The place was settled in 1656 and in 1676, at the time of King Philip's War, it was nearly destroyed. It was chartered as a city in 1890. Population, 1925, 16,236.

MARLBOROUGH (ma̤l'bŭr-ȯ), **John Churchill, Duke of,** general and statesman, born at Ashe, in Devonshire, England, June 24, 1650; died June 16, 1722. He was the second son of Sir Winston Churchill, who lost his fortune in befriending Charles I., and consequently his education was limited. The Duke of York made him an ensign of guards in 1666. Later he attained to the rank of captain in a regiment, with which he supported the French in the Netherlands. The French commander, General Turenne, praised him for distinction in the siege of Maestricht, on account of which he was made colonel. In 1678 he married Sarah Jennings, a lady of remarkable talents, who was instrumental in furthering the interests of Marlborough and advancing his prosperity. James II. made him a baron and general. The Monmouth rebellion was suppressed by him, but at first he supported secretly the Prince of Orange, and subsequently deserted James entirely, receiving for his betrayal the earlship of Marlborough from the Prince of Orange, who became William III. From 1689 to 1691 Marlborough displayed much ability in the Netherlands against France, but he soon lost favor with William, was deprived of his offices, and was cast into the Tower on a charge of maintaining treasonable relations with the exiled king. However, his release was soon secured, although he was deprived of public office for five years.

When Queen Anne succeeded William to the throne, in 1702, Marlborough was virtually regent. He expelled the French forces from Spanish Guelders, Liege, and other cities, for which the queen made him a duke. In 1703 he campaigned successfully in the Lowlands, supported the Emperor of Germany in 1704, and defeated the French and Bavarians in the decisive battle at Blenheim. His successes brought him an estate at Woodstock and the Blenheim palace was founded for him, and in 1705 he became a prince of the empire. In the Battle of Ramillies, in 1706, he completely humbled Louis XIV. of France, by which the French forces were compelled to evacuate all of Spanish Flanders, and their attempt to regain that territory in 1708 was entirely frustrated at Oudenarde on July 11, in which Marlborough was supported by Prince Eugene. The Battle of Malplaquet, in 1709, terminated in the defeat of Marshal Villars and the capture of Mons, but the contest was a fearful slaughter, the allied army losing fully 20,000 men, while the French lost less than one-half that number. His last campaign was made in 1710, in which he took additional towns from the French.

While these successes were being won on the continent, a hostile ministry was elected in England and the queen ended the intolerable tyranny exercised over her by the Duchess of Marlborough. Accordingly, Marlborough was accused of embezzling funds for private purposes and in 1712 was deprived of all his offices. When George I. succeeded to the throne he reinstated Marlborough in his military positions. A stroke of apoplexy affected him in 1716, on account of which his speech became slightly impaired, but he still filled his place in Parliament. His wife, Sarah Jennings, was born on May 29, 1660, and died on Oct. 29, 1744. The family left a large fortune, which, together with a title, was inherited by the descendants of one of their daughters.

MARLOWE (mär'lō), **Christopher,** dramatist, born in Canterbury, England, Feb. 26, 1564; died June 16, 1593. He was the son of a shoemaker, studied at King's School, Canterbury, and at Cambridge, receiving a bachelor's degree at the latter in 1583. Cambridge granted him a master's degree in 1587, about which time he settled in London to write for the stage. It is thought that his first productions were presented in public in 1587. Many of them were rude and bombastic, but they were the first tragedies worthy of that name written in the English language, and his subsequent writings entitle him to the reputation of having been the greatest English dramatist before the time of Shakespeare. Many of his later productions show splendid imaginative force, delicate finish, and studious application. His life was reckless, his death resulting from a wound administered by a boisterous rival, Francis Archer, while engaged in a tavern brawl. Among the best of his productions are "Tamburlaine the Great," "Edward II.," "Tragical History of Dr. Faustus," and "The Jew of Malta." He translated the "Rape of Helen," some of Ovid's "Elegies," and left a beautiful poem entitled "Hero and Leander" in an unfinished condition.

MARLOWE, Julia, actress, born near Keswick, England, Aug. 17, 1870. Her real name was Sarah Frances Frost. She is also known as Julia Marlowe Tabor, having married Robert Tabor in 1894, but was soon after divorced from him. When five years of age she came with her parents to the United States, lived in Cincinnati during her youth, and at an early age became interested in music and the stage. In 1887 she appeared on the stage in New York, and the following year gained a reputation by acting the part of *Parthenia* in "Ingomar." She played successfully the rôle of *Viola* in "Twelfth Night," *Highland Mary* in "For Bonnie Prince Charlie," *Rosalind,* in "As You Like It," and *Charlotte Durand* in Cable's "Cavalier." She toured the leading cities of America.

MARMONT (mär-môn′), **Auguste Frédéric Louis Viesse de,** Marshal of France and Duke of Ragusa, born in Châtillon-sur-Seiné, France, July 20, 1774; died in Venice, Italy, Feb. 28, 1852. In 1789 he entered the army, attained to the rank of brigadier general, and returned with Napoleon from Egypt. He supported Napoleon in the revolution and opposed the Russians in the Ragusan territory, for which he was made Duke of Ragusa. In 1809 he was present at the Battle of Wagram, gained the Battle of Znaim, and was made field marshal. Shortly after he became governor of the Illyrian provinces and in 1811 was appointed to the principal command in Portugal, but a severe wound at Salamanca required him to return to France. He commanded at the battles of Lützen, Bautzen, and Dresden in 1813, and in 1814 maintained a spirited contest for Napoleon, but was forced to conclude a truce with Barclay de Polly, after which Napoleon abdicated. When Napoleon returned from Elba, he was compelled to flee for safety, but after the restoration Louis XVIII. made him a peer. The Revolution of 1830 compelled him to accompany Charles X. in exile, after which he resided principally in Vienna. In 1839 he published an account of his travels with Charles X. and later wrote a treatise on military affairs.

MARMORA (mär′mô-rȧ), **Sea of,** a sea lying between Europe and Asiatic Turkey, known anciently as the Sea of Propontis. It is connected with the Black Sea by the Bosporus and with the Aegean Sea by the Dardanelles. The length is 176 miles, the breadth is about 50 miles, and area is 4,500 square miles. The coast is indented by a number of gulfs with good harbors. In the southern portion are several islands, of which Marmora is the largest, and it is famous for quarries of alabaster and marble The seaport cities and Constantinople give it commercial importance.

MARMOSET (mär′mô-zĕt), a class of small monkeys of South America. They have a squirrellike appearance. The long tail and body are covered with soft, woolly hairs. In some species the head is tufted. They subsist on insects, fruits, birds, and birds' eggs. The *striated marmoset* is one of the best known. It has a deep gray color with bands of lighter shades. These animals are small, from eight to ten inches long, and the tail is as long as the body. The *silky marmoset* has long silken hairs.

MARMOT (mär′mŏt), a class of rodent quadrupeds allied to the squirrel, native to North America, Europe, and the northern part of Asia. The best known species of North America are the *prairie marmot,* or *prairie dog,* which is found in large families on the western plains, and the *woodchuck,* found abundantly in the middle states. The *Alpine marmot* is native to the mountains of Europe. In this animal the body is eighteen inches long, the tail is about three inches, and the color is a dark gray. Allied species are found more or less widely distributed in different parts of Asia. Marmots live in large societies in extensive burrows, feed on roots, leaves, and grasses, and are about as heavy as a common rabbit, but have very short legs and a bulky body. In the winter time they live in a state of torpidity, but they are very active in the summer, barking at the approach of danger, which is usually signaled by a monitor who keeps constant watch.

ALPINE MARMOT.

MARNE (märn), a river in France, rises in in the Côte d'Or Mountains, and after a course